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MEDICAL SCIENCES.

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ISAAC HAYS, M.D.,

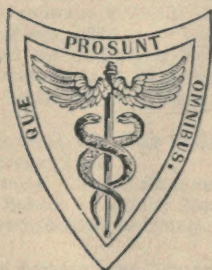
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of August.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

We must ask the indulgence of several contributors whose communications have been postponed for want of room.

We shall be pleased to return manuscripts not used, if their authors will inclose the requisite postage-stamps, but we cannot engage to preserve unclaimed manuscript longer than twelve months

The following works have been received :—

Report on Leprosy and Yaws in the West Indies. Addressed to Her Majesty's Secretary of State for the Colonies. By GAVIN MILROY, M.D. London, 1873.

As Formações Transformações des Animals estudo sobre o Desenvolvimento normal, teratologico e pathologico fundado sobre a embryogenia comparada, a physiologia, a anatomia pathologica, a hostogenia, la paleontologia par José Joaquim de Silva Amado. Primeira Parte. Lisboa. Lallemand Frères, 1872.

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Lessons in Elementary Anatomy. By ST. GEORGE MIVART, F.R.S., etc., Lecturer on Comp. Anat. at St. Mary's School. London: Macmillan & Co., 1873.

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A Treatise on the Principles and Practice of Medicine; designed for the use of Practitioners and Students of Medicine. By AUSTIN FLINT, M.D., Prof. of the Principles and Practice of Medicine, and of Clin. Med. in the Bellevue Hosp. Med. Coll. Fourth edition, carefully revised. Philadelphia: Henry C. Lea, 1873.

Handbook for the Physiological Laboratory. By E. KLEIN, M.D.; J. BURDON-SANDERSON, M.D.; MICHAEL FOSTER, M.D., and T. LAUDER BRUNTON, M.D. Edited

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A Handbook of Medical Electricity. By HERBERT TIBBITS, M.D. Philadelphia: Lindsay & Blakiston, 1873.

Ophthalmic Contributions. By GEORGE STRAWBRIDGE, M.D., Lect. on Dis. of Eye and Ear in Univ. of Penna. Philadelphia: Lindsay & Blakiston, 1873.

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Family Thermometry; a Manual of Thermometry, for Mothers, Nurses, Hospitalers, etc., and all who have charge of the sick and of the young. By EDWARD SEGUIN, M.D. New York: G. P. Putnam & Sons, 1873.

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Normal Ovariectomy. By ROBERT BATTEY, M.D., Rome, Ga. Atlanta, 1873.

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A New Method of Treating Strictures of the Urethra, after External Sections. By C. H. MASTIN, M.D., Mobile, Ala. Louisville, 1873.

The Criminal Use of Proprietary or Advertised Nostrums. By ELY VAN DE WARKER, M.D., Syracuse. New York, 1873.

The Logic of Medicine. By EDWARD S. DUNSTER, M.D. New York, 1873.

Report on the Progress of Ophthalmology, 1872. By B. JOY JEFFRIES, A.M., M.D.

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A Treatise on Refraction and Accommodation. By C.J. FENNER, M.D. Louisville, 1873.

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Quarterly Summary of the Transactions of the College of Physicians of Philadelphia. From Feb. 7, 1872, to Oct. 16, 1872, inclusive. Philadelphia, 1873.

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Report of the Eastern Lunatic Asylum of Virginia, 1872. Richmond, 1872.

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Deutsches Archiv für Klinische Medicin. Elften Bd. Drittes Heft.

Centralblatt für die Medicinischen Wissenschaften. Nos. 11 to 24, 1873.

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L'Imparziale. Nos. 6, 7, 8, 9, 10, 11, 1873.

O Correio Medico de Lisboa. Nos. 17, 18, 19, 1873.

Archives Générales de Médecine. Avril, Mai, Juin, 1873.

Archives de Physiologie Normale et Pathologique. Mai, 1873.

Annales de Dermatologie et de Syphiligraphie. Vol. IV., Nos. 3, 4, 1873.

Revue des Sciences Médicale en France et de l'Etranger. April, 1873.

Revue de Thérapeutique Médico-Chirurgicale. Nos. 6 to 11, 1873.

Revue Scientifique de la France et de l'Etranger. Nos. 37 to 49, 1873.

Gazette Hebdomadaire de Médecine et de Chirurgie. Nos. 11 to 22, 1873.

L'Union Médicale. Nos. 29 to 67, 1873.

Le Mouvement Médical. Nos. 11 to 23, 1873.

La Tribune Médicale, Nos. 239 to 242, 1873.

The British and Foreign Medico-Chirurgical Review. April, 1873.

The Lancet. April, May, June, 1873.

The Medical Times and Gazette. April, May, June, 1873.

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The Practitioner. April, May, June, 1873.

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The Royal London Ophthalmic Hospital Reports. Vol. VII. Part 4.

- The Students' Journal, and Hospital Gazette. May, June, 1873.
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 The Richmond and Louisville Medical Journal. March, May, 1873.
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 The American Journal of Pharmacy. April, May, 1873.
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 The American Naturalist. April, May, June, 1873.
 The American Chemist. April, May, 1873.
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THE
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FOR JULY 1873.

ART. I.—*Observations on the Means of Arresting Hemorrhage from Deep Cavities, with a Report of a Case of Non-malignant Stricture of the Rectum, and Remarks on the Surgical Treatment of this Disease.* By FREDERICK D. LENTE, M.D., of Cold Spring, New York. Read before the Medical Library and Journal Association of New York, February 7th, 1873. (With six wood-cuts.)

THE principal immediate danger to be apprehended in operations in deep cavities is hemorrhage, and the means recommended for its suppression are, as in other hemorrhages, ligature, ice, styptics, and pressure.

Styptics, unless combined with pressure, are, I think, very uncertain in deep-seated hemorrhages, and, even if they were not, are to be avoided unless absolutely necessary, as they would add to the difficulty and danger of the *after-treatment*, of paramount importance in operations on the rectum.

Plugging the organ, which is only a means of employing pressure, is a tolerably efficient resource; but is to be avoided if possible, as it tends materially to add to the patient's subsequent distress, and to interfere with the after-treatment, as well as to add to the danger of inflammation. If necessary, the method recommended by Allingham, in his recent work on the rectum, is decidedly the best; that is, by passing up a soft cup-shaped sponge, say the size of a large billiard ball, in some cases larger, to above the bleeding points, packing the rectum firmly below it with dampened cotton, to a little above the sphincter, and keeping the whole *in situ* a longer or shorter time, according to the size or character of the bleeding vessels; the bowels being kept at rest, if requisite, by opiates. The sponge should be prepared by passing, as Allingham directs, longitudinally near the apex, a *strong* silk ligature, and bringing it back again through the sponge to the base, from which issue thus two ends; these are kept, while pack-

ing, on either side of the rectum; and, by drawing upon them, after packing, will spread out the sponge laterally, thus tending to prevent any reflux of blood upward, so insidious, and so much to be dreaded, and also to consolidate the cotton packing below. Allingham recommends, in addition, filling the cavities of the sponge with alum, or the "persulphate of iron," and also to powder the cotton with the same; this would be, I might almost say, a *certain* means of arresting hemorrhage, however great, or from whatever sources it might occur, with any reasonable regard to prudence in the operation; but whoever has had to deal with a rectum or vagina, after it has been so treated, would require to be pretty thoroughly alarmed, and at his wit's end for a resource, before he would adopt it. This he might do with great advantage, and without materially adding to subsequent difficulties; that is, as he comes to any specially troublesome points of hemorrhage, in placing the tampon, piece after piece, to place a very small pledget of dampened cotton, moderately imbued with the sub-sulphate, just over that point, and have it held there firmly by an assistant, while he packs against it his next mass of tampon. It will much facilitate the operation if, instead of pushing up the sponge on the finger as a guide, it be rolled up *longitudinally*, seized, for two-thirds of its length, with the long *uterine* forceps, and passed on Sims' speculum. This is done with the greatest ease. This speculum should also be employed when tamponing. It has also been recommended to pass a small tube, as a portion of No. 12 flexible catheter, into the rectum, and pack around it; in order that any uncomfortable amount of gas may escape, instead of necessitating the withdrawal of the tampon, as has occurred. This recommendation should never be neglected; and it would be well not to cut off the *closed* extremity of the catheter, lest the open end be closed by pressure against the wall of the rectum, but it may be better to enlarge the *eyes* of the tube. But, as I have said, with regard to styptics, so I should say with regard to the tampon, in an operation where so much depends on the after-management, and on the parts being left in such a condition as to admit of commencing the dilatation as soon as possible, that, if this very effectual procedure, which it is always comforting to have in reserve, can be dispensed with, without imminent danger of compromising the safety of the patient, it should be done. Another consideration, perhaps still more important, militates against such a procedure. A somewhat violent reaction similar to "urethral fever" after operation on the urethra, attended perhaps by symptoms of blood-poisoning or cellulitis, may set in within the period allotted to the retention of the tampon, and the most efficient means, or one of the most efficient, for relieving this, is the injection of some anti-septic frequently over the cut surfaces. Dr. W. R. Whitehead, in a case operated upon by him, and reported in the *Am. Journ. of the Med. Sci.* for Jan. 1871, injected a solution of carbolic acid when the pulse had risen to 160, and the other symptoms were equally threatening, with the effect of

giving decided relief within ten minutes, and of reducing the pulse to 120 within four hours. He found it advisable to use these injections several times during the day. In case the persulphate of iron is used in conjunction with the tampon, a proceeding very apt to be adopted by those who have not met with the inconvenience by which it is frequently attended, it would be impossible, without incurring serious hazard of great injury to the *rectum*, and of causing a renewal of the hemorrhage perhaps, to immediately withdraw the tampon and sponge. It then becomes important to improve, if possible, upon our other means for restraining hemorrhage from deep cavities.

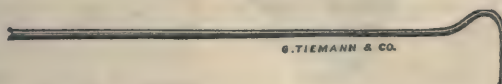
Ligature and *cold* have already been mentioned. To apply a ligature to a bleeding point high up in the rectum or vagina has generally been considered a difficult feat; but the method suggested by Dr. Whitehead, in the article already referred to, and one described by Dr. Bodenhamer, in an article to be found in the *Medical Record* of Sept. 1st, 1872, render the proceeding comparatively easy. I have, however, simplified the matter further, by contriving a *thread-carrier* still more easy of application. Fig. 1 represents the needle armed with the ligature. It is simply an ordinary

Fig. 1.



aneurism-needle somewhat elongated, and curved more abruptly, and is manipulated very much in the same manner. The bleeding vessel, with some of the tissue surrounding it, having been seized by means of a tenaculum, (the one recommended by Whitehead, and represented full size by Fig. 2, is

Fig. 2.



convenient) and lifted well up, the needle with its thread is passed around, and the thread hooked up and drawn out of the eye, and down through the anus by means of the hook (Fig. 3), which accompanies this needle; a

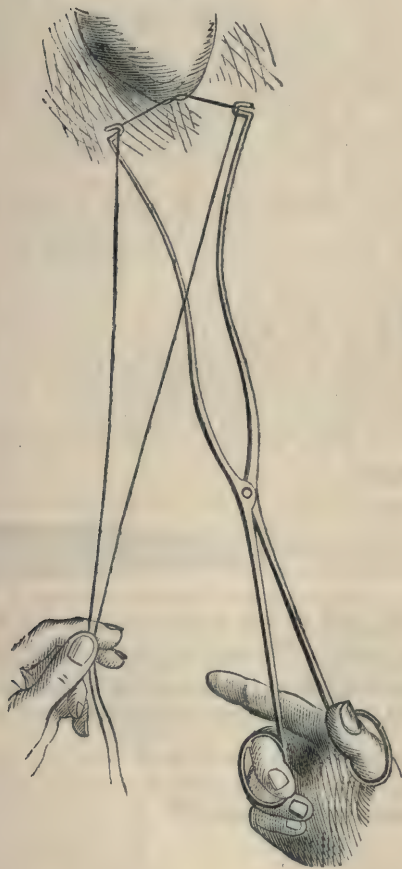
Fig. 3.



knot is then to be made and pushed up as far as may be with the fingers, and completed with some appropriate instrument. With A. L. Carroll's contrivance, Fig. 4, it can be done at any depth as readily and as securely as with the fingers; this is far preferable to the more complicated plan

generally recommended. But the tenaculum, or the forceps commended by Bodenhamer, may tear out of the abnormal tissue in which the bleeding

Fig. 4.



point is situated; or the bleeding may proceed from numerous points in the ulcerated and congested membrane *above* the stricture. Ligature is then impossible. *Cold* applications are usually employed here, and Whitehead found ice sufficient to restrain a rather copious hemorrhage. I venture to suggest an improvement in the application of this hemostatic. For the case, I am about to relate, I had procured an ordinary membranous *condom*, and in case of necessity, had intended to fill it with finely pounded ice and salt, and push the end of it up a little past the bleeding surface; should the bleeding prove obstinate, this might be withdrawn as soon as the contents are melted, and another immediately pushed up. In this way the parts may be almost frozen, and it is hardly possible that any hemorrhage could resist it, as it will freeze the skin and subjacent tissue solid in a very few minutes, and render incision bloodless and painless, as first discovered by

Arnott. Or, if it be preferred, the tube of Richardson's spray producer (the bottle containing ether or Rhigolene) may be placed near the bleeding surface, and a degree of cold equal to zero or lower produced very readily. The ether *might*, however, be provocative of irritation or inflammation; although, applied to the inflamed mucous membrane of the fauces, it is very pleasant.

For the arrest of hemorrhage, there is still another very simple and effectual means, which is to seize, with the long *uterine* forceps, or a dressing forceps, if they will reach, one of the larger sizes of the "*serrefines*" (now seldom used or alluded to) just in front of the joint, press the legs so as to open the points, and snap the latter over the bleeding vessel, whether

vein or artery, including a very little of the surrounding tissue. These might be left to take care of themselves. They hold so tightly that even a moderately solid evacuation might fail to detach them; but they would eventually separate, and, if they should catch at the sphincter, might be readily removed with the finger.

I have but little to say about *torsion* and the *actual cautery*, because, although excellent means in their proper place, they are not applicable when we have the more appropriate means above described. The objection to the actual cautery, recommended by Bodenhamer and others, as the *dernier ressort*, is similar to, and more emphatic than, that which I have advanced against the sub-sulphate of iron and the tampon; the unfavorable conditions for future treatment in which the parts are left, and also the danger of inflammation or sloughing, or contraction during cicatrization.

Before concluding this portion of my paper, bearing on the arrest of hemorrhage *during* the operation, I ask attention to the description of an appliance designed to facilitate the detection and treatment of hemorrhage *subsequent* to it. All writers on diseases of the rectum have narrated numerous instances in which there occurred insidious internal hemorrhage of an alarming and occasionally a fatal character. The symptoms of this occurrence invade so gradually that, at first, they are likely to escape the notice of the patient and his attendant. I quote Dupuytren's well-known graphic delineation of these symptoms:—

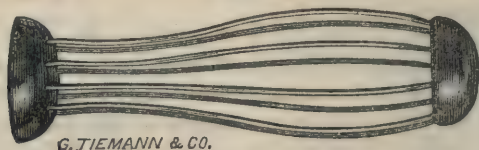
“What reveals it to the eye of an attentive and enlightened surgeon is a sensation of heat which the patient experiences in the abdomen, which seems to advance by degrees as the blood accumulates in the intestines, or he feels colic-pains, and always a peculiar kind of pain, a sort of tenesmus. The abdomen is sore to the touch, especially towards the groin and left iliac fossa. Respiration is difficult and interrupted; the pulse, at first intermittent and irregular, becomes small and frequent; the skin is discoloured; the face is covered with cold perspiration. The restlessness, which the patient first complains of, is quickly succeeded by despair, which is manifested in his conversation; there is an inclination to vomit, or vomiting, with convulsive contractions of the extremities, vertigo, etc.”

The “etc.” we may readily supply. What a horrible spectre to be rising up before one for twelve or twenty-four hours after an operation! To obviate this danger, and this unpleasant anxiety, I venture to suggest that immediately after all operations on the rectum likely to be succeeded by copious hemorrhage, for the first few hours, a wire frame or speculum should be secured in the rectum. This will subserve two purposes. By keeping the walls of the gut apart, it allows air to enter, and prevents the poultice-like action of heat and moisture combined, the most efficient means of favoring bleeding. In case bleeding does occur, it immediately manifests itself to the patient, or to the most ordinary nurse. It gives us another advantage. The attendant, having been previously instructed by the surgeon, may introduce the tube of a syringe into the speculum, and,

having placed a bed-pan properly, pumps into the bleeding rectum a constant stream of ice-water until all danger is over; the water, with or without the addition of an astringent, having so ready an outlet, the cold is kept up, and is thus really more effectual than a lump of ice.

The instrument must be of peculiar construction or it may be injurious in two ways; first, by provoking contraction of the sphincter, and thus inducing tenesmus; and secondly, if the wires are too widely separated, the wounded parts may catch between them, and thus pain, and even hemorrhage, be caused by the withdrawal of the instrument. The dimensions here given, and the mode of construction sufficiently well illustrated by the accompanying drawing, Fig. 5, are supposed to secure all the advantages, and to avoid the dangers, of the instrument. The neck (to

Fig. 5.



be embraced by the external sphincter) is half an inch in diameter, one inch in length. The instrument is four inches in length, and one inch in diameter at its largest part. The wires should be as small as is consistent with requisite strength, and only one-eighth of an inch apart. They should converge at the distal end, so as to give it a conical form, and be capped by polished steel. There are two loops of wire at the external orifice, one above and one below, for tapes to be attached to a band around the hips, to prevent the rectum from ejecting it. This instrument might likewise be used, with advantage, by those suffering from chronic diseases of the rectum, generally of a hemorrhoidal character, and sometimes attended by profuse hemorrhage; and yet who present on examination no great amount of local disease, and, even if they do, are often unwilling to submit to any radical operation. This speculum would afford such persons a very ready means of applying cold irrigation for the arrest of such hemorrhage, especially when so situated as to be unable to procure a competent surgeon.

An instrument, very similar *in form* to this, has lately been devised by Dr. Munde for an entirely different purpose; I believe for preventing prolapsus.

Of course all these measures, except perhaps the last, for the treatment of hemorrhage from the rectum, may be applied to the upper part of the vagina, the cervix uteri, the wound of the lithotomist, etc.; and it may not be out of place to suggest here that in case of any difficulty in procuring a good view of the whole rectum, even up to the sigmoid flexure, if necessary, in consequence of contraction of the sphincter,

or trouble in dilating, it would be preferable to incurring any delay in the arrest of a rapid bleeding, to thoroughly rupture the sphincter. In fact, it is probable that a good deal of the suffering, following operations on the rectum, is to be ascribed to spasmodic contraction of the sphincter, induced by the irritation above, and might be avoided by commencing the operation with its rupture.

I have been led to make the preceding remarks on the means of arresting hemorrhage in deep cavities in consequence of having been called upon to treat the following case:—

The subject of it is a lady of medium stature, but rather spare habit, never having weighed over one hundred and ten pounds, and whose average weight is ninety-eight; present weight estimated by her husband at ninety pounds, which is probably a high estimate. Has never been strong; married at the age of twenty, twelve years ago; has never been pregnant; menstrual function normal. A year after marriage, had "ulcerated sore-throat," and has "never been well since." In 1863 Dr. Charles Budd treated her for leucorrhœa and ulceration of the cervix. Her symptoms were much relieved, but her leucorrhœa was never entirely checked. Three years ago the symptoms of her present disease apparently began to develop, but she continued to bear her constantly increasing sufferings, such as are usually described in the books as characterizing this disease, without medical aid, until quite recently, when she called in Dr. House, of Haverstraw, where she resides. Soon after, in the early part of August, 1872, Dr. House asked me to visit her in consultation, and to examine her with him. On so doing, we found a fistulous tract, the existence of which she had for some time suspected, commencing in the rectum, just above the external sphincter, passing between the walls of the *rectum* and *vagina*, and opening into the latter at a somewhat higher level. But in addition we discovered, very readily, a very close *stricture* of the *rectum*, just above the internal sphincter, two inches above the anus. Examination of the *rectum* with the finger was very painful. Having no instruments at hand for further examination of the stricture, Dr. H. was advised to procure suitable bougies, and endeavour to dilate to a sufficient degree to admit of examination by the finger if possible. There was evidently a considerable thickening of the tissues, and deposit around the stricture, as a prominence could be felt in the *vagina*, extending nearly up to the vaginal junction of the posterior lip of the *uterus*. From this it was inferred that the stricture was not an *annular* one, but of considerable length. There was no nodular or irregular feel. Patient emaciated, pale, and evidencing, by her appearance, prolonged suffering, but no look of *cachexia*. Upon questioning patient as to her power of defecation, it was discovered that, for a long time, she had had very great difficulty and pain, and had been obliged to restrict her diet in consequence; she had also been obliged to have frequent recourse to laxatives to render her passages semifluid. Patient was immediately put upon ferruginous tonics, concentrated beef tea, etc. Dr. House subsequently endeavoured to introduce dilators, but could enter only a number four olive-pointed urethral flexible bougie; however, upon seeing the patient soon after with Dr. H., I succeeded in passing a similar instrument of larger size, and we soon got up to number twelve, and patient proportionally improved. I heard nothing of the patient for about three months, when I was informed that the stricture had

again contracted so that only the number four bougie could be passed, and her sufferings had greatly increased. Her husband informed me that it was not uncommon for her to sit, for five or six hours, on the vessel, attempting, with great suffering, to evacuate the bowels. I advised an immediate operation.

On the 5th of November, 1872, at her residence in Haverstraw, I proceeded to operate, with the assistance of Drs. House and Sloat, of that place, and Dr. A. A. Smith, of New York. Her physician had been advised to have the bowels as thoroughly evacuated as possible, the day before, by means of water injected above the stricture through a small flexible catheter; but she had taken medicine, and she fortunately had two semifluid evacuations larger than any she had had for many weeks, but with a great deal of effort.

The patient was placed on the table in the semiprone posture opposite a good light, and was soon thoroughly etherized. On introducing the largest Sims speculum, the stricture was immediately brought into good view, and examined by all present. It presented an irregular opening, about the size of a number four catheter, with callous edges; no impression could, without rupture, be made on this by any dilating instrument. The rectum, in front, around the fistulous opening, and also near the stricture, was in a very unhealthy, vascular condition, and bled freely upon being roughly touched. I had contrived an instrument for *exploring* and *measuring* the extent of the stricture, but the extreme contraction of the lower opening precluded its employment, and I was obliged to proceed in the dark. The anterior and posterior edges of the opening were freely divided with a probe-pointed bistoury. The end of the finger then penetrated about half an inch into a little pouch, and was arrested by a firm and close contraction above; in order to proceed, it was necessary to introduce an ordinary pocket-case director; upon this the stricture was cut *anteriorly* and *posteriorly*, the tissue grating hardly under the knife so as to be heard by all present. I was now, for the first time, able to introduce the finger to the first joint, and with moderate force entirely through the stricture, which, as had been inferred from the projecting ridge in the vagina, was of considerable length, *an inch and a half*, and was very nodular and irregular, suggesting the unpleasant idea of malignancy. Notwithstanding these unfavorable and rather formidable developments, I determined, with the concurrence of the other medical gentlemen, to proceed to the thorough division of the entire stricture; and, at the risk of present danger from hemorrhage (having, it was hoped, so well provided the means for controlling it) to accomplish it by *cutting* almost entirely, in order to avoid, as far as possible, the subsequent dangers, cellulitis, pyæmia, etc., so apt to follow the use of much force, stretching, tearing, etc. I first cut pretty freely posteriorly; and then, as I had such a wall of exudation in the whole recto-vaginal *septum*, equally freely anteriorly, having the finger of one of my assistants in the vagina to warn against a too near approach to the vaginal mucous membrane; in cutting at the upper part, towards the *cervix uteri*, I also relied a good deal on the wall of exudation to prevent wounding the *peritoneum*, which would be otherwise in some danger at this point.¹ Sims' largest blade now slipped

¹ It is a fortunate circumstance for the surgeon, though not for the sex, that most strictures, for which division is applicable, occur in females; as we have in them the advantage of being able to define pretty accurately, through the vagina, the extent to which an anterior incision is being carried, which therefore renders

readily through the entire length of the stricture, and showed the entire anterior wall of the rectum a rough, indurated, irregular surface in consequence of the wide separation of the edges of the incision. The finger could now be swept freely around above the upper margin of the stricture, and encountered a rather roughish, ulcerated surface anteriorly, against the *cervix uteri*. Up to this time the hemorrhage, much to our surprise and satisfaction, had been very trifling. But just now, the effects of the ether passing off to a slight degree, and the patient making an expulsive effort, a considerable quantity of coagulated and fluid blood gushed out of the *anus*, and continued to flow; a piece of ice of considerable size was passed up entirely through the stricture; this, not appearing to check the flow at once, was, as soon as it had liquefied, followed by introduction of a rounded sponge, three inches in diameter at the base, but extremely soft and compressible, and in the manner already described. This was pushed up opposite the ulcerated surface above the stricture, as it was inferred that the bleeding came from this point. This was only allowed to remain a few minutes, and was withdrawn with some difficulty and force, in its expanded condition, by means of the forceps, demonstrating to all present the very complete division of the contracted gut, and also, it may be mentioned, the additional difficulty we should have encountered had it been necessary to follow Allingham's advice to impregnate the sponge with sub-sulphate of iron. The bleeding now appeared completely arrested; and the patient was taken up and laid on a bed in an adjoining room. The pulse, which had maintained the character that it had previous to the operation, now became gradually feebler, suggesting to some the idea of hemorrhage, but no other symptom betokened it, and the introduction of the finger, and then, for certainty of diagnosis, the six-inch tri-valve *speculum ani*, showed its complete absence.¹ In the mean time, the patient had vomited freely several times, and she continued to do so for about an hour, after which it ceased permanently, and the pulse regained its former volume and force. Two subcutaneous injections of Magendie's solution were given, in doses of five drops, during the first hour. Upon recovering complete consciousness patient expressed herself as entirely free from any pain or smarting, and her countenance was perfectly natural.

Nov. 7. Have just received a note from Dr. House dated last evening. He says: "The case, thus far, is progressing as nicely as we could wish. Slept well last night with eight drops of Magendie's solution. Has had no pain whatever since operation. Have given eight drops again to-night to insure a good night's rest. Pulse varies from 90 to 100."

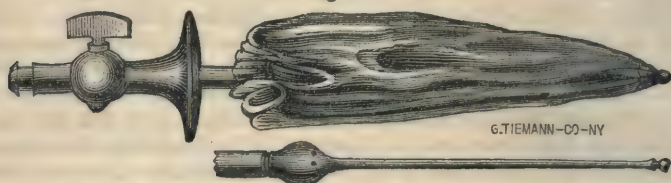
12th. I proceeded to Haverstraw on the 10th to commence the dilatation. Found that the patient had continued to feel perfectly well, "with no pain or ache" since last date; had had natural evacuations, the last one "figured" and as large as the finger; no discharge of blood or mucus. Dr. House washed out the rectum twice yesterday with a solution of carbolic acid grs. xv in water ℥viii, which returned almost as fast as injected, by the rectum and through the fistula. To-day, a considerable portion was retained for some hours, contrary to my intention, and since then patient has complained of dizziness, and of a burning sensation at the epigastrium, and on moving her to get her in position for the operation, she vomited a little. This may or may not be due to absorption of the

this incision preferable, in many cases, to the posterior, if we propose to employ only one.

¹ The idea of the wire speculum had not, at this time, occurred to me.

drug, as she is subject to those attacks, and quite dyspeptic along with her other troubles; but it suggests a caution in its employment in these cases; from the use of which my friend Dr. Whitehead thought that he obtained such signal benefit in the relief of the alarming symptoms succeeding his operative procedures. I have directed that only washings with pure water

Fig. 6.



twice a day be used, in the absence of any unpleasant symptoms. On attempting to pass Whitehead's dilator, that which I had already anticipated, from what I considered its faulty construction, actually happened; and I was much chagrined to find that the further treatment of the case must be postponed until the apparatus could be altered. In the first place the point is unnecessarily sharp, where previous incision has opened the gut to a large extent, and the staff is entirely too flexible; so that, even when fully annointed, it can scarcely be pushed through a normal sphincter, and then it becomes bent from two causes; one, the impinging of the point against the gut, the other from constriction of the *anus* pulling up the rubber, in its passage through, and thus drawing the point over still further; another difficulty arises from air finding its way *between the different layers* of the dilator, and the impossibility of removing it. How the air gets between them, especially when water is the dilating medium, is a mystery. However, on complaining to Mr. Stohlmann of the imperfect instrument manufactured by him, he showed me one which had acted in a precisely similar manner, as regards the bending and the air, in the hands of a surgeon of New York, only a few days ago. The only respect, in which Dr. Whitehead's directions had been disregarded, was that India-rubber tubing had not been drawn over the staff to prevent the macerating action of the water on the whalebone. This would have obviated the trouble to a certain extent only. I can only explain the success, which Dr. W. certainly seems to have met with in the use of his dilator, by supposing that the external sphincter ani, in his cases, was either *stretched* at the operation, or that it was, as is not unusual in such debilitated subjects, exceedingly relaxed. I had the following modifications made—the whalebone replaced by thick brass wire, and terminated by a knob of sufficient size to prevent injury to the diseased mucous membrane and raw surfaces of the *rectum*, with the usual groove behind it for tying on the *capotes*; these were also put very slightly on the stretch when tied around their open ends so as to limit, if possible, the entrance of air, instead of leaving them hanging loosely.¹

Provided with this improvement I again visited my patient on November 11th, in the afternoon, found her very comfortable and cheerful; and

¹ At p. 86 of the *Medical Examiner* for Feb. 1845, is a cut of a dilator, contrived by Dr. Mütter of Philadelphia, very closely resembling Dr. Whitehead's, but arranged for inflation by air instead of distension by water. M. Nélaton has also used a similar instrument with air.

proceeded to etherize her, as I had determined to *rupture* the external sphincter, for two reasons. First, to afford perhaps permanent relief to its excessive irritability, caused by long-standing external hemorrhoids; secondly, to allow, for a certain length of time, her attending physician, with some comfort to himself and less distress to her, to continue the dilatation. This was accordingly done, the dilator was passed in with perfect ease, and expanded to the diameter of an inch and a half. I met with no material resistance, and it might have been stretched still further, but it was considered prudent to proceed moderately. The amount and regularity of the dilatation could be estimated, in some degree, by the finger in the *vagina*. But before using the instrument, the amount of water, intended to be used for each application, should be first thrown into the bag and the diameter then measured and noted. Two hours after the operation, when the patient had entirely recovered from the ether, she said she felt perfectly comfortable except a slight smarting of the lacerations at the verge of the *anus*, caused by rupturing the sphincter.

16th. Received a letter from Dr. House to-day, from which I extract the following. "I used the dilator on Wednesday (13th) with some little difficulty, because of the grasping of the instrument by the sphincter, and again to-day, with still more difficulty. So much tenesmus was produced that, after it was filled, it was forced bodily out of the anus. She has had, for the past two days, some discharge of pus. Appetite and digestion much improved."

23d. Received a note from Dr. H. to the following effect: "Mrs. W. doing very well indeed, and I am succeeding admirably with the dilator, by the aid of Sims' speculum. I have not as yet increased the volume of the dilator, because Mrs. W. says she cannot bear any more at present." I had advised the use of Sims' smaller speculum to facilitate the introduction of the dilator by preventing the grasp of the sphincter, and by all means to gradually increase the size of the dilator. Dr. H. also states that Mrs. W. has had no catamenia since the operation. It was due a few days after.

Dec. 6. Dr. House writes that the case is progressing very favourably.

11th. Visited patient in company with Dr. H. Everything as favourable as could be hoped for. Placed patient in Sims' position, and with his large speculum examined the *rectum and vagina*. The examination caused very little distress, and no bleeding; the cut surface is smoothing off, but feels still quite irregular and unnatural. The fistula is *apparently* undergoing a spontaneous cure, as I was unable to pass the smallest probe into the rectum; it passed about half an inch, in an oblique direction upward from the vaginal opening. There is, however, a minute opening, since a little of the water injected into the rectum, for cleansing it, flows out of the vagina. But the fluid feces, which always passed, to a certain extent, through the fistula, have not done so for some time, nor does she now even experience the tumefaction, and feeling of prolapse of the part, which formerly troubled her every now and then. The verge of the anus has also assumed a healthier appearance. The purulent discharge from the rectum has diminished gradually, and she has not had, for a couple of weeks, the bearing down sensation, which, at first, accompanied the accumulation and discharge of purulent matter from the rectum. She has improved in strength and in appearance progressively, and her bowels move regularly and without the slightest inconvenience even when the passage is "formed." Injections are used night and morning merely for

the sake of cleanliness. In the one used at night, carbolic acid and sulphate of zinc are added (15 grs. of each to the pint). If used *in the morning* it always causes pain in the epigastrium, and nausea. The dilator was used by Dr. H. at first every second day, and left *in situ* for half an hour. Latterly, he has used it every third day, and left it an hour. He finds it absolutely necessary to use the Sims speculum to prevent the grasping of the India-rubber by the sphincter. Patient complains of no actual pain from the dilator, but a very disagreeable *pressure*, especially in front, the site of the fistula and of tenesmus. The size of the dilator has been increased gradually, by adding more water (an ounce in all) until, at its most distended portion, the circumference measures five inches.¹ The interval between the last two applications was four days, and the dilatation was more easy and accompanied by less inconvenience, the doctor thinks, than any previous one. He is therefore advised to continue them at that interval. He has used, by my advice, an hour previous to the application, a suppository of morphia and belladonna, gr. $\frac{1}{3}$ each, and he has also continued the hypodermic injection of morphia gr. $\frac{1}{3}$ at the time of application; but which it is now advised to discontinue. Patient sits up now over two hours night and morning. Her pulse has been about 84. Dr. H. has given her citrate of iron and quinia.

30th. Under this date Dr. House writes: "Your letter received in due time, and your suggestions acted upon with benefit to the patient. She seems to bear the dilator better since the interval has been lengthened, but it is still attended with a great deal of pain. I have, at your suggestion, not used it with a greater circumference than five and a half inches." Dr. H. also states that she has had a perfectly natural figured stool each day and without pain. The amount of pus is diminishing under this treatment, and it is of better character.

Jan. 28. Have just received a letter from Dr. House, from which I condense the following facts: "She has been gradually gaining, and is now doing admirably; sits up nearly all day, and walks about at pleasure. I do not find any tendency to contraction. Digestion now good (it will be remembered that her digestion had been for a long time very poor). Pulse very much improved. With regard to the *dilator* she now bears its presence one hour and a quarter with but little inconvenience. But I think this is due, in some measure, to the fact that I have shortened its staff somewhat, since the pain complained of seemed to be caused by the distal end impinging against the gut."²

Feb. 5. Three months after operation, saw the patient to-day with Dr. H., and made a digital examination; find the diseased surface smoother, and not painful to the touch. Patient's general health very good; gain-

¹ A case is related by Mr. Curling (*Obs. on Dis. of the Rectum*) where a "surgeon, not estimating this power [hydraulic pressure] burst the bowel," with a fatal result. The importance therefore of accurately noting the *additions* of fluid, and also the proportional increase in the circumference of the dilator, will be readily appreciated. The gut is not very sensitive, and the pushing of a bougie, or the distension of a dilator, may be carried so far as to do irreparable harm with very little warning, as far as pain is concerned.

² It is well to note this fact; and, where the nature and extent of the obstruction, as in this case, are such as to necessitate a dilator of the full length, to have the staff *curved* so as to correspond with the curve of the sacrum somewhat, and thus avoid impinging against it. It was, probably, to avoid this occurrence, that Dr. Whitehead insisted on so flexible a stem. It is now evident that all the suffering which the patient has experienced from the dilator has been occasioned by its being about one-half an inch too long, or by having no curve.

ing flesh. At the last application she bore the dilator an hour and a half, and could have borne it longer. Advised to increase the intervals between the applications to ten days, and then to two weeks, and to discontinue them, if practicable.

Remarks.—There are some important points established by this case, and which require comment. But I would preface this with the remark that, though stricture of the rectum is, in private practice, comparatively a rare disease, it is not so rare as is commonly supposed. The symptoms of stricture are, for the most part, common to other affections of the bowel; and treatment of these symptoms is, not seldom, carried on for a long time without the medical attendant once suspecting that a tolerably close stricture may exist. "Indeed," remarks Prof. Mason, in a recent paper,¹ "it was only a short time since that we were informed of the case of a lady who had been treated by no less than seven different physicians for the relief of this symptom [uterine], and yet, not until she had fallen into the hands of the eighth medical man, was her rectum examined, and the source of her trouble detected to be a stricture of the rectum." Such cases are not uncommon in the pages of most authors who treat of this subject. Since a large proportion of cases of stricture, among hospital patients at least, are caused by chancre extending from the vulva, we should be particularly careful not to decide upon symptoms referable to the rectum, in the female sex, without a thorough examination.

In the first place, we see that extensive incisions anteriorly and posteriorly are not necessarily followed by troublesome, much less alarming, hemorrhage, provided they are made strictly in the *median line*; next, that it is not necessary, when the stricture has been thoroughly divided at the time of the operation, to commence the further treatment at once, as has been usually recommended, in order to prevent adhesion and possible recontraction. This is important, for, if any decided reaction should ensue, as is commonly the case, or any tendency to cellulitis, it is of great moment to delay as long as possible before commencing fresh irritation.

It will be necessary for my purpose to quote the opinions of several of the most reliable surgical authorities as bearing on this subject; and, in order that this paper, already tedious I fear, shall not be unnecessarily extended, I shall be as brief as circumstances will permit.

Mr. Birkett (*Holmes' Sys. of Surg.*) condemns "deep incisions, and advises that the stricture should be simply notched at several points."

Velpeau (*Op. Surg.*, edited by Mott), "The annular contractions, or those in the form of a bridle, or that are semilunar, are the only ones that admit of a trial by this process [incision]; and it is only, in fact, for the purpose of preparing or favoring the dilating means to be made use of, that it can be seriously recommended."

¹ Am. Journ. of Med. Sciences, January, 1873.

Nélaton (*Clinical Lec.*, Atlee) regards incisions in those parts, for the removal of the altered tissues, as dangerous, because "the arteries are quite voluminous, and on account of injury of the veins."

Syme (*Prin. and Prac. of Surg.*) observes:—

"Division of the contracted portion with a cutting instrument, notwithstanding the obvious risk of hemorrhage and inflammation incurred by doing so, has been occasionally practised, and with such speedy, as well as complete relief, that some practical writers regard this method as one which ought to be preferred. But, experience having ascertained that wounds of the rectum, even of *very small extent*, are followed by serious or fatal consequences; and the bougie, though not so speedy in its operation as the knife, being in general equally effectual, and not exposed to the same objections, prudence seems to require that the practice of incision should be either entirely abandoned, or only used in particular cases, with extreme caution."

He alludes to the case of a young lady on whom he used the knife with complete success. But he does not state *how* he used it.

Curling prefers "notching" to a single deep incision. He advises "gentle dilatation on the following day." "Free and deep incisions are," he says (*Obs. on Dis. of the Rectum*), attended by serious risk, and I know of one case in which, after two or three slight notches only, a large abscess formed behind the rectum, and burst into the bowel above the stricture."

Pirrie (*Sys. of Surg.*) states:—

"Sometimes, even after the most cautious and gentle use of the bougie, it is necessary to have recourse to the hip-bath and to opiate injections, in order to allay the irritation induced. . . . In some cases, the stricture has been divided by simply notching it in different parts, by means of a blunt-pointed bistoury introduced on the finger; but the very great risk of hemorrhage, the difficulty of checking it, and the danger of inflammation from wounds of the rectum, are serious objections to this procedure, which should only be resorted to in extreme circumstances, and then with the utmost possible caution."

Dr. Gross advises the usually, I may say universally, commended treatment—dilatation by bougies. But, he adds, "The surgeon often incises strictures of the urethra, and why should he not apply the same principle of treatment to strictures of the rectum and anus?"

Allingham (*Diseases of the Rectum*) states:—

"Some strictures are so resilient that they return to their original condition directly you cease to dilate them. They are generally bridle or linear strictures, and they are often benefited by making several *slight* nicks into them, and then gently dilating. This operation I always keep for a last resource; it is, by all means, to be avoided, if possible, as ulceration may, and, I think, often will, ensue. . . . Gentle dilatation is, in my opinion, the best method to adopt. I say *gentle* very advisedly, as, I am sure, the more thoroughly this idea is kept in view, the better it is for the patient. I have seen severe hemorrhage follow Todd's dilator."

Bushe says (*Diseases of the Rectum*, p. 280), "When the stricture is near the anus, narrow and firm, the surgeon may hook it down with his finger, and then partially divide it in two, three, or more points, with a hernia knife."

The latest authorities on this subject and on surgery, Van Buren,¹ Ashurst, Hamilton, and Mr. Bryant, in his work just issued from the London press, add nothing to our knowledge, or our means of treating this disease, and all reiterate the cautions with respect to hemorrhage, to the danger of bougies and the other difficulties alluded to in the above quotations. Indeed, the later the surgical authority, the less he seems disposed to say on this subject. Dr. Willard Parker, in a letter recently received by the writer, says: "The subject of stricture of the rectum and other portions of the canal is still in much darkness. The diagnosis is not always easy, and a non-malignant to-day may become malignant to-morrow. I have seen two cases killed by an attempt to dilate—one 28 years old, the other about 35, both females." He uses for nicking the stricture an instrument contrived by himself, a *bistourie caché* with three blades.

We have here, then, a résumé of what the authorities of the present day have to say on this disease. With such an array against doing anything of a more decided or radical character, the surgeon of less eminence may well shrink from taking such a responsibility. Lest it should seem over-rash and presumptuous in the writer to advocate what has been so decidedly repudiated by so many excellent surgeons, and lest he should seem disposed to place the result of one, or at most two, cases against their combined experience and judgment, he has, at the hazard of extending his article to an unwarrantable length, taken the liberty of quoting their own testimony, and hopes to justify himself, partially at least, by its analysis, in proposing some more radical and successful procedure in these desperate ailments, even if the results of his case and Dr. Whitehead's are left out of the question. In the first place, they almost universally admit, or expressly state, that in no case can a *cure* be expected. Mr. Colles (*Lect. on Surgery*) avows that "we are still in want of a cure for this disease." The exceptions are two cases alluded to by Mr. Curling, and a recent case of Dr. Eager, of New York, referred to by Prof. Mason. Mr. Curling's second case can hardly be considered complete, since there had not been a sufficient lapse of time after the treatment to judge of the permanence of the cure. In the next place, from the cautions which they throw out at every step, and the dangers which they point out, whether the bougie is used alone, or aided by their careful notches, and the actual hair-breadth escapes which they relate, and even fatal occurrences now and then, it is evident that *dilatation*, however skilfully practised, constitutes neither a safe nor a very successful procedure. In fact, the very dangers which they apprehend from free division, and which, not seldom, with all their care, confront them after notching and dilatation, will probably be obviated by it, to a certain extent at least. Thus, to adduce the evidence of the only two cases of *complete division* attainable, Dr. White-

¹ Dr. Van Buren remarks, in a recent letter to the writer, that "this subject will bear a good deal of working up."

head's and the writer's, no serious hemorrhage attended them, and no unpleasant consequences from ulceration succeeded them.¹ As regards the danger from ulceration, abscesses, fecal sinus, etc., following a solution of continuity in the rectum, it is very evident that it is by no means obviated by the operative procedures heretofore recommended, as the experience of the writers from whom quotations have been so freely drawn abundantly testifies. Instead of enhancing this particular danger, there is every reason to believe that an immediate free opening of the gut, producing a comparatively extensive raw surface, instead of two or more small ulcers, will have the opposite effect, from the fact that the exposed surface will be subjected to less congestion, contusion, abrasion, and irritation of various kinds from the passage of fecal matters downwards, and the necessary enemata upwards, in consequence of the unobstructed egress and ingress afforded. If any solution of continuity, then, is determined upon in aid of dilatation, the weight of evidence seems to be that it is safer either to cut largely at one, or at most two, points, or to forcibly rupture to the same extent, than to have three or four *small foci* of danger. Dr. Whitehead's method of limiting and defining the extent and position of the rupture by effecting it as far as possible with the finger, is doubtless the safest method of "forcible rupture" yet proposed,² and, if cellulitis, hemorrhage, and pyæmia are escaped, the subsequent use of his elastic dilator, modified if necessary, will doubtless afford satisfactory results.

As regards the principal objection advanced against this operation, the imminent risk of hemorrhage, I think, with the improved appliances of Drs. Bodenhamer, Whitehead, and the writer, and with the results, in this respect, of the two operations reported, this may be regarded as no greater than in most other cutting operations. As regards the treatment by bougies, and especially those in almost universal use up to this time, it may be remarked that there is no circumstance which probably renders the aggregate amount of injury likely to be inflicted by it greater than by any other procedure. We have seen how very cautious the best surgeons are in their use, and how persistently they inculcate extreme care, and that, even in their hands, serious results ensue. Yet it is a means of treatment within the capacity of the most incompetent and inexperienced practitioner, one not

¹ Copeland (*Observations on the Principal Diseases of the Rectum and Anus*) says, that he has divided *indurated, annular* strictures posteriorly, and that he has frequently seen "the late Mr. Ford" do the same. But he omits to state to what extent the division was carried. Within the past few days, Dr. Mason has sent me brief notes of a case of stricture operated on by him at Charity Hospital by division; and he refers to another case in which he assisted Dr. Watts. He is also of the opinion that Dr. J. R. Wood has operated in this manner. None of these cases have been published; and they were all simple annular strictures, and the incision was confined to the posterior wall.

² If I understand my friend, Dr. J. Marion Sims, correctly, this is the method proposed by him.

possessed of the least surgical dexterity; and the less informed he is, the more likely would he be to proceed rashly from the *apparent* simplicity of the operation. Even the patients themselves, as numerous fatal examples attest, consider themselves fully competent to judge of the proper method of proceeding. The mucous canals, when in a pathological state, from any cause, are sometimes excessively friable, even when no ulceration exists, when to the sight and touch they are apparently normal. This should always be borne in mind when an instrument is to be introduced, or when any rough manipulation is required. In a case of labour, which the writer attended in consultation, where no unusual delay had been allowed, and when the forceps were skilfully employed by the physician in attendance, the operation being called for merely on account of uterine inertia, the vagina tore extensively, almost like wet paper, and the patient lost her life in consequence. Within the past year, I met with a similar case, in which there had not been sufficient delay or impaction to injure the vagina, and where the forceps were applied by a competent and careful physician, yet a considerable rupture of the posterior wall of the vagina was produced. I only discovered it some days after in consequence of having been called in to see the patient for debility, and a rather profuse purulent discharge from the vagina. At a meeting of the Obstetrical Society of New York in 1870, a case of rupture of an apparently healthy vagina by some simple manipulation was reported, and several of the members alluded to similar cases. In one instance, the rupture was caused by coitus. This condition may be, in the case of the vagina, rather the result of a congenital tenuity of the tissue than of pathological change;¹ but a similar pathological condition would seem much more likely to occur in the rectum than in the vagina, since its integrity is so much more frequently impaired by disease; and I allude to these instances because they are not often referred to by authors, and indicate, in addition to the evidence already adduced, how dangerous, in all cases, the pressure necessary to force an ordinary rectal dilator through a tight stricture may become even in competent hands; how much more so then, in the hands of those entirely unaware of these quicksands! Mr. Bryant (*Pract. of Surg.*, p. 296) observes, "The surgeon is seldom applied to until ulceration has already occurred, when dilatation is *clearly useless if not injurious*." If such be the fact, and it is probable that, in most cases, it is so, it is singular that he is the only surgeon who has, so far as the writer's researches have extended, placed this limitation to the operation by dilatation.

¹ A similar condition of the *uterus* not infrequently presents itself (*marciditas uteri*), and has led, now and then, to perforation of its walls with a sound, even in the hands of careful and experienced physicians, and with a surprising immunity from serious consequences.

Another important fact is frequently overlooked, or generally unnoticed by writers on this subject, in determining upon the necessity or the urgency of operative interference; namely, that there is danger to life, that is, sudden danger, before the stricture becomes so close as to cause considerable pain, or to manifest its presence by any grave constitutional symptoms, or even by any symptoms at all. "In one remarkably interesting specimen," Mr. Birkett states (*opus cit.*) "in the museum of the College of Surgeons, a stricture of the rectum, which had existed for years, had suddenly become entirely closed by effusion of lymph from the irritation of a fish-bone, which had been swallowed, and had become arrested at the contracted part." "I know of several instances," says Curling (*opus cit.*) "in which an occurrence of this kind (lodgment of a foreign body) first led to the detection of the complaint." I abridge, from the *New York Journ. of Med.* for November, 1846, the following interesting case, reported by E. A. Vanderpool, M.D.

"Three weeks ago, I was called to P. K., a young man who had swallowed a peach stone two days previously, and was suffering from ineffectual attempts to void it." The cathartics used had no effect. "Eight days after, again sent for. Examining him *per rectum*, I discovered, at the depth of three inches, a *firm annular stricture* which felt as if a thread was drawn so closely around the gut as only to admit the point of the finger by pressure, and was undilatable by any force I could exert, for some fifteen minutes, against it. Next morning, I visited him in consultation with Dr. John Watson (of the New York Hosp.). On examination, the pit could be felt lying crosswise above the stricture, having acted as a valve."

"There is a striking analogy," according to Pirrie, "between the condition of the parts in stricture of the urethra and in that of the rectum," and the same accidents, it may be remarked, attend the treatment by bougies and by divulsers in the one as in the other—rupture of the walls of the canal, hemorrhage, abscesses, and sometimes deaths, though the consequences of these accidents are, of course, far less serious, as a general rule, than in the rectum. Reasoning then from analogy, we might infer that a mode of treatment which would be safe and effectual in one would be so in the other, and possibly such will prove to be the fact. My friend, Dr. F. A. Otis, has directed the attention of the profession, in a paper read before this association, to a most important fact, which has very generally been overlooked by surgeons—the effect of strictures of the urethra of "extreme calibre" in perpetuating troublesome affections of the genitals, for which no adequate cause can be discovered, since no stricture is discernible by the means usually employed, the passage of a No. 12 bougie into the bladder. This has generally been considered the *experimentum crucis* until the appearance of Dr. Otis's paper. But he has demonstrated, that it is only by the passage of a "bulbous sound" of unusual diameter that a negative verdict can be pronounced; and that it is only by the *complete division* of any portion of the urethra where this may be arrested that the symptoms can be permanently subdued. In

an article on this subject in the *New York Med. Journ.* for February, 1872, he says :

“Of what possible consequence, it may be asked, is the presence of a stricture, of a calibre sufficient to permit the passage of a No. 32 F. sound, where the normal calibre of the urethra is evidently several millimetres smaller? Briefly, that experience has shown the power of such strictures to keep up irritation, and even a purulent secretion at various points along the urinary tract. Simple over-distension of such strictures, or of *any* strictures, is at best but a temporary expedient. Complete rupture or complete division is the only method by which the speedy return of a stricture to its original point of contraction can be prevented.”

These remarks of Dr. Otis are quoted because they are very pertinent to the point which I am anxious to establish, namely,—that, if the stricture of the rectum be not pretty thoroughly divided, and at once, we shall be likely to have more troublesome complications, and more delay and difficulty in the after-management, with almost a certainty of failure as regards a permanent cure. I say *pretty thoroughly* divided, because, in some cases suitable for the operation, a *complete* division is obviously neither always practicable nor necessary. Dr. Otis has lately informed me of another very pertinent and important fact—when he has divided these strictures *with the knife*, they have required no after-treatment whatever, no bougies to keep them open; but, months after, they are perfectly patent.¹ It may be objected that Dr. Otis's operation is only the “nicking” process, and not a free *division*; but the complete preliminary *stretching* of the stricture by his instrument, upon which he insists, with the consequent condensation of the tissues which it involves, renders his nick equivalent to a deep incision, so soon as the dilator is withdrawn. To what extent we may also in the case of the *rectum* be able to dispense with the tedious, annoying, and somewhat dangerous introduction of dilators, after operation, time and further experience must determine. There is great discrepancy in the advice given by different writers as to the management of the dilator, especially as regards the interval which should elapse before commencing, after cutting, and that between the subsequent applications. There is no doubt that with the usual cutting operations, the slight notches, dilatation should be commenced very soon after—twenty-four or forty-eight hours. But, on the contrary, in the case here reported, the lapse of a week was followed by no tendency to contract; and Dr. House states that the longer intervals were followed by an easier application of the dilator. It is possible that it may with great advantage be dispensed with entirely. Many also

¹ Since the above was written, I have, through the kind invitation of Dr. Otis, been enabled to examine three of his worst cases, there having been from four to six strictures. I passed No. 30 and 31, French scale, diameter about one-third of an inch, of Dr. Otis's bulbous bougies, backwards and forwards, through the urethra, without detecting the least contraction, and without causing even an uneasy sensation on the part of the patient.

advise that it be left in for hours. This is attended by considerable risk, and with anything but benefit, as in the case of the urethra. It is possible that five or ten minutes is long enough, unless a very small dilator, one which causes very little tension, or none at all, be used; the idea being not so much *to stretch the canal*, as to bring about such a degree of excitement, and activity of the absorbents, as shall stimulate them to remove gradually the fibrous effusion.¹

Even in *malignant* stricture, and in cases where nothing but palliation can be expected, I see no reason why the operation should not be attempted, and it is precisely in such cases that it would be likely to indicate its superiority, as to safety, over the other measures except colotomy; as much less *violence* is done to the diseased tissue, and there would consequently be less danger of stimulating the heterologous elements into increased activity. The temporary success and quite prolonged relief, which have been recently afforded by the use of cutting instruments in the case of malignant disease of the uterus and vagina,² warrant a greater success in the case of the rectum, where neither the amount of disease is so great nor its progress so rapid. From consulting the different writers on the subject, it is also evident that a diagnosis between malignant and non-malignant stricture is, in some cases, very difficult if not impossible; to which Prof. Parker's remark is *apropos*, that "a non-malignant to-day may" (in the opinion of the surgeon) "become a malignant to-morrow." In such cases, to quote the words of Sir Charles Bell, "You have only to hope that it is not *the disease*, but an aggravated condition of stricture." He is here speaking of what he terms *scirrhus contracted rectum*; which term Mr. Colles in his "lectures" employs, but condemns as tending to mislead, since the disease thus designated by different writers is, he contends, generally of a non-malignant character. In all these doubtful cases at least, and as soon as the patient's condition becomes serious, *not desperate*, operation on the rectum is certainly preferable to a lingering and painful death, or what, to some patients, would be a scarcely less terrible alternative, *lumbar colotomy*. Some patients, after the latter operation, have lived their brief residue of life in comparative comfort with very great relief, it must be admitted, from their terrible physical suffering, but no one can possibly appre-

¹ It will have been perceived, from the notes of this case, as taken by Dr. House, that this plan has not been strictly followed out in its management. But my opinion of the advice usually given, in this respect, like that concerning many other points in the treatment of stricture, has been undergoing a gradual change during the progress of the case, and of my examination of cases treated by other surgeons, and I have to-day, Jan. 28th, notwithstanding the very favourable report of the attending physician, advised that the duration of the application be much abbreviated. However, as a general rule, it may be said that the duration of the application should bear some relation to the length of the interval.

² See Am. Journ. of Obst. for August, 1872, and Med. Record for December 16th, 1872.

ciate the *discomfort* but the sufferer; and I incline to agree with the opinion of Sir Charles Bell, that, as a general rule, "the unfortunate person had better cease to be;"¹ that is, supposing the question of operation has only reference to the prolongation of life, and not to the relief of otherwise irremediable suffering.

Viewed in one aspect, we must regard the operation of colotomy more favorably. The difficulty of diagnosis between malignant and non-malignant stricture has already been adverted to. The operation, therefore, undertaken simply to relieve pain; perhaps, at the same time, to prolong life to a moderate extent, may indirectly prove curative. In this connection, I beg your attention to a very interesting and instructive case of rectal stricture. Through the courtesy of Prof. Mason, Surgeon to the Roosevelt Hospital, I was permitted to examine, a few days ago, in the wards of that noble charity, one of his successful cases of lumbar colotomy.

The patient, a middle-aged man, entered the hospital in June, 1872, and was examined by Dr. Mason and some of his colleagues attached to the hospital. The characteristics of malignancy were so marked as to force the doctor to the "conviction" that he had to deal with a cancer of the rectum. Though a bougie of considerable size, œsophageal I think, could be passed, the man's sufferings were so great as to render his entreaties for the operation importunate; it was accordingly performed by Dr. Mason with his usual success. The man is now walking about with very little appearance of disease about him, and no suffering.

Upon passing my finger into his rectum, I discovered, at the usual site of fibrous stricture, a simple annular coarctation, which admitted, tightly, the last phalanx of the index finger, and which felt as if merely a string had been drawn around the gut; otherwise no evidence of disease whatever; the rectum being as soft and supple, to *my* touch, as it ever was. That is, in less than seven months from the time when all cause of irritation was removed, the conditions, which necessitated a diagnosis of cancer, had disappeared under no other special treatment than colotomy; just as puncture of the bladder, in case of impermeable stricture of the *urethra*, by relief of irritation, so modifies the stricture in a short time, that an instrument, sometimes of considerable size, may be passed, and a cure thus inaugurated.

Now, although it is held by some writers, that a prolonged irritation of a non-malignant disease may induce cancer, it is hardly supposable that the mere *removal* of irritation could convert a malignant into a benign disease. We are therefore driven to the conclusion that this was originally a simple annular stricture; which, at least up to a certain point of its existence, might have been divided, the sufferings of the patient as readily relieved as by colotomy, and a probable cure at the same time effected.² And this is one of the strongest arguments in favor of applying our cutting

¹ Institutes of Surgery.

² It is proper to state that Prof. Mason, in a letter to the writer after a recent examination of the patient, says: "The result of the case, however, has often made me question that opinion" (as to its malignancy).

operation to the seat of disease instead of to the colon ; that, when a cure is practicable, we effect it by one operation instead of two, and thus, of course, in properly chosen cases, with so much less danger and suffering to the patient. In many cases of genuine and unmistakable cancer, as in eight out of Mr. Allingham's eleven cases, (op. cit.) only colotomy is possible.

From my own somewhat limited observation, but especially from a study of the pathological conditions described by others, I conclude that many cases of non-malignant stricture are originally annular and simple, and that the various causes of irritation and contusion, to which, after a certain period of their existence, they are subjected, develop the irregular deposits, hyperæmia, ulcerations, etc., so characteristic of cancer, as, in addition to the general aspect of the patient, closely resembling the cancerous cachexia, to deceive the most accomplished diagnostician. The remarkable effect of colotomy in improving the condition of the ulcerations attending stricture, was noted by Allingham after one or two of his operations for non-malignant stricture. Indeed he recommends the operation rather for this form of the disease than for cancer ; though at least 8 of his 11 cases, published in St. Thomas's Hospital Reports for 1870, are clearly cancerous. He also remarks that the operation (colotomy) does not invariably remove all the unpleasant symptoms, nor even the most prominent one, in many cases, "straining," as this sometimes continues even when there is no accumulation of solid feces in the rectum. In Dr. Mason's case, I found quite solid fecal matter adhering to my finger after my examination.

In conclusion, and to sum up some of the evidence which has been adduced in favor of preference for *division*, it may be stated, that colotomy is not unattended by the usual dangers of great operations, especially when the peritoneum is invaded ; that, in many of the cases for which it is recommended, division is feasible, as effectual for immediate relief, with the advantage of being possibly *directly* curative, and not through a subsequent serious operation ; that, in the present state of our diagnostic knowledge of the subject, a differential diagnosis between malignant and non-malignant stricture is impossible ; that, even if malignant, division is, in a certain proportion of cases, capable of affording the temporary relief of colotomy, with at least *as little* danger to life ; that, although the operation of *complete division* (anteriorly and posteriorly), having been so seldom performed, cannot very confidently appeal to experience to prove its superiority as a curative measure, we find that, the more nearly this method has been approached, in the practice of various surgeons, as by posterior division, or by deeper notching than usual, with a corresponding diminution of resistance to the subsequent passage of dilators, the more satisfactory and speedy, as a general rule, has been the after-treatment ; while the brilliant results, which have thus far uniformly attended this method of operating on analogous conditions of the urethra, give promise of similar, if not as complete, success in

the case of the rectum. Finally, that, although I adduce but one case of my own to illustrate the positions taken in this paper, it ought to be borne in mind, in estimating its corroborative value, that a more formidable one for this operation could hardly have presented itself, where any operation, short of colotomy, would be thought of; the patient's general health, and especially her digestive power, being greatly impaired, the stricture unusually close, entirely undilatable, not admitting the finger as a guide, its linear extent, and great irregularity and nodular condition, giving it much the character of what is commonly diagnosticated as cancerous stricture, and *scirrhus contracted rectum*.

COLD SPRING, Feb. 5th, 1873.

NOTE.—Since this paper was put "in press," I have met with M. A. Muron's report of the clinical remarks of M. Verneuil, on his operation of stricture of the rectum, styled by him "linear rectotomy," and published in the *Gazette Médicale de Paris*, for Jan. 4.¹ M. Muron alludes to the analogy of this operation with external urethrotomy or external œsophagotomy, as I have already done with regard to *complete section* (internal) of stricture of the urethra; and, I may also add, of the recently advised division of stricture of the lachrymal duct.

He goes on to remark that, although the level, to which the peritoneum descends posterior to the rectum, varies in different individuals, "*Il semble que le chirurgien peut atteindre, sans danger, ceux qui ne dépassent pas 10 centimètres à partir de l'anus.*" He insists that the section directly in the median line (posterior) is free from danger of hemorrhage. He remarks upon the "immense progrès" which this operation constitutes in the history "*de thérapeutique des rétrécissements du rectum,*" which, if one consults, he will see "how little efficacious the former methods have been." He goes on to say that the surgeons of Paris have heretofore come to look upon these strictures, as I have shown that English and American surgeons have done, "as not amenable to radical cure, and as pretty sure to terminate fatally sooner or later."

As regards the results in three cases of *cancerous* rectum, subjected to this operation, and which I have ventured, in the above article, to include among the cases suitable for *division*, I quote his language: "*Il s'agissait d'amoindrir les accidents,*" and that, "in this point of view, the operation was very useful to the sufferers."

I shall take occasion, in a future paper, to discuss this operation of M. Verneuil. I will only remark now, that, in the cases of males, the posterior operation would probably be, as a general rule, all that is necessary or perhaps safe, but that, in the case of females, notwithstanding the somewhat greater proximity of the peritoneum to danger, and the additional risk of hemorrhage (if there is any) from the anterior incision, its advantages, pointed out in this paper, more than counterbalance those objections, especially when it is borne in mind that in females, among whom these strictures usually occur, the fibrous deposits are generally far more extensive in front than behind, which, it seems to me, a prudent surgeon would not leave untouched, however freely he may have di-

¹ See No. of this Journal for April, 1873, p. 549.

vided posteriorly. It is with great satisfaction, however, that I find my positions unexpectedly fortified by so good an authority as M. Verneuil and the few other eminent Parisian surgeons who are represented as having repeated his operation. I have also just learned, from my friend Prof. Mason, that he has, within the last fortnight, at Charity Hospital, successfully performed "linear rectotomy."

COLD SPRING, May 13th.

ART. II.—*An Examination of the Causes, Diagnosis, and Operative Treatment of Compression of the Brain, as met with in Army Practice.* By S. W. GROSS, M.D., Lecturer on Diseases of the Genito-Urinary Organs in the Jefferson Medical College, and formerly Surgeon and Brevet Lieut.-Col. U. S. V.

THE symptoms of compression of the brain are those of profound insensibility and paralysis of motion and sensation, as denoted, briefly, by utter unconsciousness, opposite hemiplegia and anæsthesia, full, slow, or laboured pulse, dilated and fixed pupils, and stertorous breathing. The agents which induce these phenomena, and which exert a most decided influence on the question of the propriety of surgical interference, may be divided into two classes: first, those which call forth early symptoms; and, secondly, those which excite late symptoms. The former are sufficiently voluminous to diminish the intracranial space, thereby compressing the tissues of the brain, and driving out its normal fluids, while the latter act rather as foreign bodies and sources of irritation, which, while they do not encroach materially on the cavity of the skull, equally lead to disturbances of the cerebral circulation, through irritation of the vaso-motor nerves, or anæmating spasm of the vessels, or through changes effected in connected nervous centres.

When the compression depends upon the first class of causes, as an extensive depression of the bones, or a large clot of blood, surgeons are agreed as to the propriety of operative measures; but, when it is produced by an insignificant foreign substance, as an osseous spicule, or a few drachms of pus, they are not so unanimous in this regard. In the former case the importance of relieving a true source of pressure is fully recognized; but in the latter it appears to me that another equally weighty object in interference is too much overlooked, namely, the removal of a source of irritation. A small collection of pus, a ball, or fragment of bone, does not awaken primary symptoms of compression; but these are preceded by signs of irritation. Among the most reliable phenomena of suppurative meningitis after gunshot injury of the skull, for example, are

intense headache, high febrile action, convulsions, and delirium, a group of signs which points to exalted excitability and mobility of the nervous centres. Unless this condition be relieved, hemiplegia, dilated pupils, retarded pulse, and coma rapidly follow. The same is true of a small abscess of the cerebrum, in which the symptoms of paralysis of the motor and sensory ganglia are certainly rather ascribable to changes induced in the surrounding tissues than to pressure. Hence the question of operation in certain cases should be based upon phenomena which are really not those of compression. In suppuration of the membranes, or of the substance of the brain, the aim of the surgeon should be to anticipate consecutive trouble, and to get rid of a localized source of irritation, thereby preventing the extension of the inflammatory process.

My objects in writing this paper are to direct attention to compression as it occurs in army life, to contrast it with cases that occur in civil practice, and to endeavour to lay down certain rules by which the differential diagnosis of this affection, particularly when it depends upon effusions, may be determined. The great difficulty in deciding the question of surgical interference is the uncertainty of the precise locality which the pus or blood occupies; but I believe that if my own researches are sustained by future observations, they will do much to clear up this point. I shall comment upon compression in accordance with the nature of its exciting cause, as extravasation of blood, effused pus, depressed bone, and foreign bodies.

1. COMPRESSION FROM EXTRAVASATED BLOOD.—This cause of cerebral compression is less often met with in army than in civil practice; but, when it does occur, it is generally due to gunshot fractures with depression, although a simple fissure, or contusion of the skull, with secession of the dura mater, may be sufficient to give rise to it. The blood may be poured out, 1st, between the dura mater and the cranium; 2d, in the sac of the arachnoid; 3d, on the surface of the brain; and, 4th, in the substance of the brain. With the exception of the first site, the effusion is always due either to direct injury by a missile which penetrates the brain, and opens a large vessel, or to laceration and contusion of the brain. Little, therefore, is to be expected in the way of surgical relief, when the extravasation is situated in the last three positions. Sanguineous effusion *between the skull and dura mater* is more common in army experience than extravasation into the cavity of the arachnoid, the latter, according to the observations of Mr. Hewett, being more frequent in civil hospitals, and depends upon (a) laceration or puncture of the middle meningeal artery; (b) rupture of the small vessels which pass from the dura mater to the skull; and (c) injury of one of the great sinuses; the relative frequency of these different lesions being in the above order, at least one-half of the instances being due to the first cause.

a. By far the most frequent, serious, and fatal cases are those in which

the anterior branch of the middle meningeal artery is opened, at the lower and anterior angle of the parietal bone; but the amount of blood effused depends upon the extent of the attendant separation of the dura mater; the symptoms being influenced by the rapidity of the extravasation. In general, the quantity is large, even nine ounces, as I once witnessed, being collected into a dark, dense mass, which strongly adheres to the dura mater. Some writers assert that, when this vessel is lacerated, the resulting clot may be small, and act as a direct compress upon the bleeding point; but I am satisfied that, however plausible this fancied action may appear in books, it never occurs in actual practice, since the dura mater is always extensively separated by the blow which induces the accident, and the hemorrhage is so considerable, that a large cavity or depression is formed on the surface of the brain, which yields to the pressure. Even in cases where the clot is large and thick, the bleeding does not always cease, as I have observed in two instances in private practice, in which fluid blood continued to flow from the openings made by the trephine.

The middle meningeal artery is usually ruptured by direct gunshot injuries of the temporal regions, in which the bones are fractured and depressed or splintered, although counter-fissure of the middle fossa by projectiles striking the side of the cranium, may occasion the lesion, as in the example narrated hereafter. Of eight cases that I have examined, six were instances of depressed fracture of the temporal fossæ; one of fracture without depression; and one of contusion of the right parietal bone, with fissure of the opposite middle cranial fossa, extending through the bony canal in which the vessel was lodged. The last case, which occurred in my own practice, being the only one of the kind in army surgery of which I have any knowledge, its peculiarities will be pointed out presently. In all of these examples, the extravasation was extensive, the clots being thick and large. In six, the symptoms of compression appeared at a period varying from twenty or thirty minutes to several hours; in one on the third day, and in one they were delayed until the sixteenth day.

b. The blood may be poured out by the very numerous small vessels which pass from the dura mater into the cranial bones; but the quantity is not nearly so large as in the former instance, nor are the cases so fatal. Of seven examples of compression, dependent upon this form of extravasation, all were associated with fracture and depression; but, with two exceptions, the displacement was trifling; and in all, the clot was seated between the displaced bone and dura mater, so that the former really did not irritate the latter. The situation of the clot was in one at the top of the skull; in two at the parietal regions; in two at the occipital; and in two at the frontal region; and the extent of the effusion varied from about two to fourteen drachms. In 4 instances, the symptoms set in in a few minutes; and in 3, they were delayed respectively until the third, sixth, and sixteenth day.

c. Laceration of one of the large sinuses of the dura mater may furnish the cause of the compression, the longitudinal being more frequently injured in army surgery than any other.¹ When the fracture has an external communication, it permits the blood to escape freely, and there is no collection beneath the bones; but, where the scalp is uninjured, the blood may accumulate, and give rise to symptoms. Such cases must, however, be very rare, as I have been unable to discover a single instance due directly to gunshot wounds.

Mr. Guthrie has reported the case of a dragoon who was wounded in the body by a musket ball at Salamanca, which caused him to fall from his horse on the top of his head. Coma supervened; the scalp was opened, and blood was seen to be flowing through a separation of the edges of the sagittal suture. The symptoms increased, and, on the twelfth day, two crowns of the trephine admitted of the escape of some blood which had collected beneath the bones from a laceration of the longitudinal sinus, when the compression disappeared and the man recovered. (*Commentaries in Surgery*, 6th ed., p. 373.)

There are not a few cases to be found in the reports of campaigns, in which projectiles have driven pointed fragments of the broken skull into the longitudinal sinus, thereby forming obstacles to the hemorrhage until they were removed, when, the blood escaping externally, there was no compression; but I have failed to discover more than one example of compression from extravasation from this sinus, and this occurred without fracture of the skull, and, so far as I am aware, it is the only fatal example of rupture of the sinus by gunshot on record.

A rifle ball divided the scalp and pericranium to the extent of four inches obliquely across the posterior extremity of the sagittal suture. There was instantaneous vomiting, and mixed signs of concussion and compression, followed by death eleven hours after the injury. Dr. Longmore,² who observed this case in the Crimea, found that the longitudinal sinus had been ruptured, and that about four ounces of coagulated blood were pressing on the brain. A spot of contusion, which presented the usual ecchymotic appearances, was seen in each hemisphere of the cerebrum; but the bone was not fractured.

The *symptoms* of this form of compression differ from those occasioned by depressed bone, or the presence of a foreign body, in not being immediate. A man, for example, is struck on the head by a ball or a fragment of shell, and the phenomena of concussion of the brain ensue. In the stage of prostration or shock, the lacerated vessels pour out little or no blood; but as soon as reaction occurs, hemorrhage sets in, and continues until the space caused by the separation of the dura mater from the inner wall of the skull is completely filled. The severity of the symptoms depends, therefore, upon the extent of the secession of the dura mater, and upon the rapidity of the effusion. If the quantity of blood emitted be small,

¹ Demme merely alludes to a laceration of the transverse sinus, with escape of blood from the external ear, from counter-fracture of the base of the skull. There are no details; so that I can make no use of the case.

² A Treatise on Gunshot Wounds, p. 65, Philadelphia, 1863; and Holmes's System of Surgery, vol. ii. 2d ed., p. 161.

and the flow be gradual, the brain accommodates itself to the pressure, by parting with a corresponding amount of its normal fluids, and the symptoms are obscure or not present at all; whereas, if the quantity be large and rapidly effused, the phenomena are sudden and well marked.

As I have already indicated, the symptoms may follow the injury in a few minutes, or be delayed for many hours or even days, the period of their access being proportionate to the duration of the stage of collapse; but they usually appear within half an hour, and are blended with those of concussion. In characteristic cases, however, they soon give way to utter unconsciousness, with full, slow pulse, dilated pupils, retarded, laboured, stertorous, puffing breathing, and paralysis with diminution of temperature of the opposite side, a group of signs that cannot be mistaken. There is scarcely room for doubt as to the true nature of the lesion, when it is remembered that, in concussion, the phenomena are immediate and transient, whereas, in compression, there is a lucid interval between the reception of the injury and the declaration of the symptoms, which, when they have set in, are progressive and increase in intensity.

The phenomena are not always so perspicuous. In exceptional instances, instead of complete insensibility, there is no loss of consciousness, and the hemiplegia is imperfect; and it is a singular fact that consciousness may persist to within a short period before death. In these cases the remaining symptoms are ambiguous. Mr. Hutchinson (*London Hospital Reports*, vol. iv. p. 44) has recorded an interesting example of effusion of nearly three ounces of blood in the sphenoidal fossa, in which partial hemiplegia of the opposite side was manifest six hours after a fall on the head, but had passed off on the following day. Here the pressure appeared to have exerted merely a temporary local effect. In other cases of large extravasations, there is no stertor, the pupils are normal or nearly so, the pulse is rapid, soft, compressible, irregular, or jerking, and paralysis is either absent or incomplete. In these instances of absence of the more prominent symptoms, the diagnosis is aided by the history of the case and by the condition of the pupils and the scalp. Thus, an interval of immunity from symptoms, the presence of a contusion with collateral immovable and dilated pupil, point to effusion under the seat of the injury, the state of the pupil being due to pressure by the clot on the trunk of the third nerve, as exemplified in the case narrated below. Tonic spasm or rigidity of the hemiplegic limbs, if paralysis be present, although other important symptoms are wanting, is, as stated by Dr. Todd (*Clinical Lectures on Paralysis*, etc., p. 222) a valuable confirmatory sign of effusion on the dura mater, and one which I have observed myself.

It is well established that contusion and laceration of the brain may evoke phenomena which cannot be distinguished from those of large extravasations of blood immediately beneath the cranium; but I am satisfied that injury of the brain of sufficient extent to induce coma, stertor, full,

laboured pulse, and dilated pupils, is less common in army than in civil practice. When the stage of collapse after gunshot injury is aggravated and protracted, and merges imperceptibly into that of compression, without there having been an interval of consciousness, and if, in addition, there be great unrest, convulsions, or undue muscular activity, the surgeon may safely conclude that the case is one of contusion and laceration. Hence it will be inferred that, in cases of doubt, a period of lucidity after the reception of an injury, succeeded by the gradual supervention and increase of the signs of compression, is the most reliable symptom of superficial effusion of blood.

The following example of compression from laceration of the middle meningeal artery, came under my observation after the battle of Shiloh, and affords an excellent illustration of the termination of these cases when not interfered with, although in this particular instance trephining at the apparent seat of the trouble would have been useless. It is also highly interesting, first, from the fact of its being an example of indirect fracture, a rare form of injury in field practice; and, secondly, from the anomalous symptoms, and particularly the existence of incomplete hemiplegia on the same side as the extravasation, for which, however, sufficient cause was found on the opposite side of the brain. The pulse was certainly not far from natural as to its rate, although its volume was diminished; the nature of the respiration indicated trouble at the base of the skull; and the fixed and extremely dilated state of the left pupil justified the inference of effusion in the left middle fossa with pressure on the third nerve:—

On the 8th of April, 1862, my attention was called to a young man, who was lying on his back in a tent, in a state of profound stupor. The respiration was slow, stertorous, and of a puffing nature. The pulse was small, feeble, eighty-four; pupils dilated—the left almost to its utmost extent—and completely insensible to light; left side of the body slightly paralyzed, corresponding extremities cold, the foot and hand being livid. The flexor muscles of both arms were contracted; fingers flexed, and thumbs turned inward upon the palms. Upon raising the arms and letting them go, they fell powerless. This was more especially the case with the left limb. The left leg was firmly extended, powerless, and not so sensible to external impressions as the right, which was in the same condition, but to a less degree. A lacerated wound, about an inch in length, was found just below the right parietal eminence; and, upon introducing the finger and making pressure upon the skull, convulsive movements of the trunk and extremities ensued. The sensation imparted to the touch was that of a depressed fracture; but the bone was sound, and the deceptive feeling was due to the manner in which the aponeurosis and periosteum were torn, the latter of these structures being detached for a considerable distance beyond the wound. When the injury was inflicted the man wore a cap, the lining of which was lacerated by the projectile, while its exterior was not damaged.

The previous history of the case, elicited from a companion who accompanied the patient to the rear, a distance of nearly three miles, was that he had been struck by a piece of shell, on the previous day, or about

twenty-four hours before I saw him. He was knocked senseless, but soon recovered, vomited, was obliged to rest frequently on his way to the rear, appeared drowsy, and unwilling to proceed after each stoppage. He made no complaint, and was rational; but was restless during the early part of the night and moaned so much as to disturb his friend, who desired him to keep quiet, which he did, although he made no answer. On the following morning he appeared to be in a deep sleep from which he could not be aroused, on which account my services were requested.

Although the legitimate conclusion was that the compression was due to extravasated blood, the symptoms were too obscure to warrant trephining at the seat of the injury, and nothing was done beyond the application of cold water to the shorn scalp, and the relief of the distended bladder. Life was extinct in five hours, and section disclosed an enormous clot between the left parietal bone and dura mater, extending down into the middle fossa of the skull, and completely filling it up, and pressing upon the trunk of the third nerve at the sphenoidal fissure. There was a linear fracture passing through the spheno-parietal suture, and dividing the canal containing the middle meningeal artery, which was lacerated. On the right side, immediately beneath the contused, but otherwise uninjured, bone, the vessels of the pia mater were enormously distended, the gyral spaces were filled with semifluid blood, and, on slicing the brain, small spots of ecchymosis were present at numerous points, and a clot, the size of a hazel-nut, was seated in its substance, at a spot corresponding with the external injury.

Treatment.—When blood is largely effused in this situation it is very questionable if it is ever absorbed; and, if changes are effected in an extensive clot similar to those of blood-extravasations elsewhere, I have failed, after careful search, to find an example. It is very sure that the patient will die from suppression of the functions of the brain through anæmia, or from secondary meningo-encephalitis, or in consequence of putrid changes in the coagulum, unless the coagulum be removed, while it is equally certain that he may recover if operative measures be resorted to promptly. Thus, examination of the 16 cases, of which brief analyses have been made at a preceding page, that of Mr. Guthrie being excluded, as it was not due to gunshot, shows that in 2, my own, and that of Longmore, nothing was done, and both patients perished; and in 14, all of which, with one exception, were examples of depressed fractures, surgical treatment was instituted, with the following results:—

In 10, the trephine was applied—in one instance four crowns; of these, 3 recovered, and 7 died; while in 4, the elevator and forceps were found adequate to remove the depressed and detached fragments, and of these, 3 recovered, and 1 died; thus affording a total of 14 operations, with 8 deaths, or a proportion of mortality of 57.14 per cent. Now let it be added that all of the cures were examples of primary interference, and we derive the wholesome precept to operate at once. 10 operations were immediate, of which 4 were mortal, while 4 were secondary, and none recovered, trephining having been deferred until the tenth, thirteenth, fourteenth, and nineteenth day respectively; and in all suppurative encephalitis was found

post-mortem. These facts go to show that the conservative treatment of this class of cases is wrong, and that the trephine, and other measures to afford access to the clot, are positively indicated.

In three of the instances of death after immediate operation, dissection disclosed contusion of the brain, and in none did the dura mater regain its level after the clot was removed. In the fourth case, in which twelve fragments of bone and an immense clot were removed, the dura mater remained depressed, and the man did not rally, but a necroscopic examination was not held. These demonstrate, first, that, as in cases which arise in civil practice, the presence of blood on the dura mater from missiles of war is often attended with contusion of the brain, in which event the injury will prove fatal whether the trephine be employed or not; and, secondly, that, when the dura mater does not immediately rise up into the artificial opening after the coagulum has been extracted, the man is very liable to perish, thereby forming a very valuable aid in the prognosis of each individual case after operation.

I cannot ascribe the death of any of these patients to surgical procedures. In the examples of primary trephining, the fatal result was due to the concomitant contusion and laceration of the brain; and, when the operations were secondary, the cause of death was invariably abscess within the substance, or pus on the surface of the brain. Death ensued in the two cases of non-interference; and, judging from the results of immediate operations, at least two of those subjected to secondary trephining might have been saved, had it been performed early. The teachings, therefore, of these cases lead to the conclusion that, when compression of the brain is dependent upon the extravasation of blood between the dura mater and the skull, the latter must be opened, in order that the clot may be turned out; and that, to be of any avail, the operation should be practised at once, since, when stupor, convulsions, and hemiplegia arise, after the case has had time to run through the different stages of inflammation, they are due to irremediable suppurative inflammation of the pia mater and arachnoid, or to abscess of the brain, or to a combination of both of these conditions.

It is highly interesting, moreover, to note that, in seven of these instances, operations were practised for laceration of the anterior branch of the middle meningeal artery, and that only one of them recovered; whereas, in seven cases, the small vessels which passed from the dura mater to the bones gave rise to the extravasation, and five recovered; so that the prognosis of the latter is far more favourable than that of the former condition.

Such, I am convinced, is the proper treatment when the extravasation coexists with compound fracture, with or without depression. It sometimes happens, however, that there is no evidence of fracture, but that the scalp is contused or puffy, and the symptoms of effusion are clear. The stupor and other signs, but particularly the existence of paralysis of

the opposite side of the body, and immovable, dilated pupil on the same side as the injury, point to a clot, and warrant laying open the bruised integuments, and applying the trephine at the corresponding point of the skull. Should fluid blood escape at the opening thus made, as I have twice witnessed in private practice, the surgeon is further justified in removing a disk of bone over the course of the meningeal artery as it lies in the groove in the anterior inferior angle of the parietal bone, so as to secure directly the lacerated vessel. The application of the trephine, at a point situated about an inch above the zygomatic arch, and an equal distance behind the external angular process of the frontal bone, will effect the object.

The correctness of this practice is attested by a few cases of recovery from such injuries, other than those inflicted by weapons of war.

Dr. Hennen, for example, has narrated the case of a soldier who was confined in the guard-room at Versailles, under the supposition that he was intoxicated; but the symptoms of compression steadily progressed, and the entire scalp became puffy and œdematous. On the fourth day something like irregularity was detected at the upper and anterior part of the right parietal bone. Incision at this point indicated neither fissure nor fracture; but six crowns of the trephine, none of which, however, included a perfect circle, were applied, and an enormous clot was removed. The operation was followed by great relief; the resulting suppuration was copious; and the man was cured. (*Op. cit.*, Case XLIX.)

The results of surgical interference in this group of injuries show conclusively that it is unfair to compare cases in field practice, as regards the final issue, with those met with in civil life. In the latter an exceedingly lethal complication is nearly always present, to such an extent, indeed, that Mr. Hewett says:—

“The post-mortem records of St. George’s Hospital show that within the last few years there have been twenty-five cases of large extravasations of blood between the bone and dura mater, in all of which the brain was more or less extensively lacerated. Injuries of such a compound nature easily explain the difficulties as to diagnosis, and the reason why the trephine is so seldom applied nowadays for extravasated blood; and why, also, when resorted to, the operation so seldom succeeds.” (*Holmes’s System of Surgery*, vol. ii., 2d ed., p. 258.) Mr. Callender (*St. Bartholomew’s Hospital Reports*, vol. iii. p. 429) confirms these observations, and Mr. Hutchinson writes, “It is a remarkable fact that the annals of modern surgery do not, so far as I am aware, contain any cases in which life has been saved by trephining for this sort of things.” (*Op. cit.*, p. 51.)

If a comparison be instituted between the cases which I have analyzed and those referred to by Mr. Hewett, the inference is clear that extensive contusion and laceration of the brain is less common, as a complication of effusion on the dura mater, from projectiles of war than from the causes met with in civil hospitals. Serious concomitant lesion of the brain is shown by post-mortem inspection to attend injury by balls or fragments of shell less frequently than blows or falls from a height upon the head, in the latter of which the force is diffused, and not circumscribed as in the case of injury by missiles. The results of operative interference tend also

to the same conclusion, since extensive lesion of the brain could scarcely have existed in the instances of recovery which comprise nearly one-half of all the cases that I have cited.

Extravasation of blood into the *arachnoid sac* coexists with nearly all of the severe contusions of the cortex of the brain, when it is due to laceration of the vessels of the pia mater, with simultaneous rent of the visceral arachnoid. It is also occasioned by rupture of the superficial cerebral veins or of the great sinuses, or it may depend upon wound of the dura mater, and coexist with effusion on that membrane. The blood may be converted into a false membrane, or become inclosed in a distinct cyst, and the man recover; but when a cyst has formed, it is liable to be followed by epilepsy or insanity. Mr. Hewett¹ quotes the case reported by Dr. Quain, in which the former affection was thus occasioned; and also refers to those narrated by Fisher, Foville, and Blandin, the two latter occurring in old soldiers, in which severe blows upon the head induced insanity; and dissection many years afterwards disclosed large encysted collections of blood in the cavity of the arachnoid. In cases of "general paralysis of the insane" blood cysts have been met with five times by Calmeil, and once by Dr. Ogle. (*Brit. and For. Chir. Rev.*, vol. 36, p. 224.)

The symptoms of this accident vary in intensity. In some cases, as that of Legouest, referred to below, there is no evidence whatever of cerebral disturbance, and even when the effusion is very considerable, provided it be diffused or spread over both hemispheres, the phenomena are vague and masked by those of laceration and contusion of the brain. Da Costa (*Medical Diagnosis*, p. 127, Phila. 1870) says that extravasations, limited to the arachnoid cavity and subarachnoid spaces, "occasion ordinarily pain in the head, somnolency, and profound coma with paralysis, and without anæsthesia or slow pulse, but with relaxation of the muscles, and sometimes with convulsions." When, on the other hand, the fluid is more circumscribed, or the compression is limited to one cerebral hemisphere, the symptoms are decided; but they are identical with those produced by effusion between the bone and dura mater from injury to the middle meningeal artery. In both conditions there are more or less marked coma, dilated pupils, slow, full, or laboured pulse, hemiplegia with diminution of the temperature of the opposite limbs, and slow, noisy, or stertorous respiration. In the majority of instances, after the immediate symptoms of shock have passed off, there is a lucid interval before unconsciousness sets in; while in others absolute insensibility exists from the very outset. In these latter cases, the symptoms point to more extensive laceration or contusion of the brain itself; and I

¹ To any one who may be desirous to investigate this subject, may be recommended, as containing all that is of value, the paper "On the Extravasation of Blood into the Cavity of the Arachnoid," *Med. Chir. Trans. of London*, vol. 28; and the able essay on "Injuries of the Head," in *Holmes's System of Surgery*, by this writer.

believe I am right in asserting that in them the pulse is rapid, small, or feeble, rather than slow, full, or laboured, while the breathing is at most noisy and unaccompanied by stertor. The differential diagnosis of subcranial and intra-arachnoid extravasation is, so far as I am aware, impossible; but an analysis of recorded cases leads me to confirm the observation of Mr. Hutchinson (*Op. cit.*, p. 53) that the marked inequality in the size of the pupils is rarely present in the latter, and that the hemiplegia is not so decided.

The *prognosis* of effusion in this situation is unfavourable in the extreme. The dead-house of civil hospitals shows, now and then, that considerable collections have undergone the various transformations usual to sanguineous extravasations elsewhere, and that the injuries of the head had been survived for many years. The case, moreover, of Legouest (*Traité de Chirurgie D'Armée*, p. 311, Paris, 1863) indicates that absorption of the blood was slowly progressing in an injury by gunshot. A soldier was struck at Solferino, June, 1859, by a ball which contused the external angular process of the frontal bone, and died of a foreign affection in January, 1862, when a spoonful of a yellowish and pulpy false membrane was found beneath the dura mater, which had compressed, and produced atrophy of the anterior lobe of the brain, without having occasioned the least functional disturbance.

Treatment.—I am not aware that collections of blood in the arachnoid sac have ever been recognized during life so as to call for the application of the trephine, with a view to their evacuation. Examples have, however, occurred in which the symptoms of compression were decided; and, in these rare cases, a circle of bone has been removed, under the supposition that the blood was seated between the skull and dura mater; but the condition of that membrane pointed to the existence of effusion beneath it. Under these circumstances, it rises at once into the hole made by the trephine; presents a bluish appearance, and is devoid of the natural pulsation which it always possesses when its normal relations with the brain are not changed. Shall the tumour be opened? I answer, yes. The opponents of the operation urge that there is danger of protrusion, or so-called hernia of the brain; and, above all, that the admission of air to the contused and lacerated brain and its envelopes may excite general meningitis, or dissolution of the cerebral tissues, intermixed, as they are, with clots of blood. These objections may be valid; but it remains to be shown that the patient ever does recover, when the amount of blood is so large as to induce marked symptoms of compression, without its being evacuated. On the other hand, the reports of several cases, where this procedure was practised, and the patients saved, show that an incision into the bulging dura mater is absolutely called for. Thus, a grenadier was struck on the temple by a fragment of a shell, which rendered him senseless, and produced effusion under the scalp. He soon recovered, but

shortly afterwards fell into a condition of stupor, for which venesection and trephining were resorted to. There was no fracture, nor was there extravasation on the dura mater. In a few hours he began to talk, answered questions rationally, and took nourishment; but he soon sunk into his former condition. On removing the dressings the dura mater was seen to form a non-pulsating swelling in the artificial opening. A crucial incision gave vent to two tablespoonfuls of half-fluid and half-clotted blood, and complete consciousness was restored in two hours.¹ Equally happy results after blows or falls upon the head have been obtained in civil practice by Morand,² Hecker,³ Bremond,⁴ Ricker,⁵ Ogle,⁶ and Chevalier.⁷

Infiltration of blood, *on the surface of the brain*, in the meshes of the pia mater, usually coexists with laceration of the brain, caps the hemispheres, and induces no distinctive signs. "The patients lie comatose and give no evidence of partial paralysis."⁸ This state of affairs is irremediable. Extravasations into the *substance of the brain* are nothing more nor less than examples of traumatic apoplexy, and must be treated as such by general measures, since they are not accessible to the knife. They invariably coexist with contusion and laceration of the tissues of the brain, and are generally rapidly fatal, although not always so, even when the effusion is considerable. The case of Nagle (*Med. and Surg. Hist. of the British Army in the Crimea*, vol. ii., p. 287) affords a good illustration of the gradual absorption of a clot, which was as large as a walnut, and seated in the vicinity of the optic lobes. Had the man not indulged in liquor, there is every probability that he would have outlived the injury.

On reviewing the entire subject of compression from extravasated blood, I hope to have made it sufficiently clear that the fluid, when accessible, should be evacuated. But the important question arises in connection with operation, *can the seat of the effusion be clearly determined?* These cases are often of the most puzzling nature, and every surgeon has met with instances in which he was convinced that life was threatened by an extensive clot, but was deterred from trephining on account of their obscurity. If it were true that certain functional disorders are due to lesion of particular parts of the encephalon, they would exert great influence on the question of surgical interference; hence attempts have been made at various times so to fix the connection between special symptoms and definite extravasations of blood into the substance of the brain that their situation could be arrived at with some degree of certainty. Thus pathological research has demonstrated that effusion limited to one corpus

¹ Petit, *Traité des Maladies Chirurgicales*, ii. p. 88, Paris 1790.

² *Opuscles de Chirurgie*, P. I., p. 171, Paris, 1768.

³ Bruns, *Handbuch der Praktischen Chirurgie*, Abth. I., p. 931.

⁴ *Ibid.*, p. 933.

⁵ *Ibid.*, p. 905.

⁶ Brodie, *Med. Chir. Trans.*, vol. xiv., part ii., p. 391.

⁷ *Ibid.*

⁸ Callender, *op. cit.*, *St. Bartholomew's Hosp. Rep.*, vol. v. p. 36.

striatum or thalamus opticus produces opposite motor, and more or less sensory, paralysis; but so, also, does a clot in the crus cerebri, the cerebellum, and the pons Varolli, while extravasation on the dura mater, or in the arachnoid sac, has the same effect. In the case of the large central ganglia, or the pons, persistence of consciousness is regarded of importance as a distinctive feature, but there may be hemiplegia without loss of consciousness when the blood is seated on or between the membranes. More or less complete unconsciousness, hemiplegia, and paralysis of the third nerve are present in hemorrhage into the pons, but a clot on the dura mater or in the arachnoid sac may equally produce paralysis of both hemispheres, hemiplegia, and palsy of the motor oculi. Paralysis of parts supplied by the nerves which proceed from the base of the brain may depend upon lesion of the nuclei at their origin, or simply upon compression of their trunks outside of the brain proper. The fact is that, although a coagulum may have a purely local effect, in the majority of instances it finally influences or disorders, perhaps through secondary paresis, other portions of the brain, thereby interfering with a multitude of functions. In what other way can the loss of consciousness from lesion of the pons Varolii be accounted for? This interdependence of the cerebral nervous centres, or liability of an injury in one to occasion disorder in others, is due to their commissural connections, and is made the text of a series of highly instructive papers by Mr. C. Hanfield Jones (*Medical Times and Gazette*, vol. i., 1872, pp. 593, 653, and 680), who, while he does not question the established doctrine that pressure when considerable is an efficient cause of coma and general paralysis, thinks that too much has been made of this agent, and that the secondary or induced derangements, which may be more prominent than the disorder resulting from the original injury, and which frequently occasion death by arresting the action of the heart or lungs, are really due to irritation.

Since other functions than that of the part affected are interfered with in cases of effusion, it appears to me useless to attempt to localize clots merely by disturbances of functions of individual nervous centres. The determination of the differential diagnosis or the question of operation can scarcely be aided by special symptoms. Aphasia even may be due to a clot beneath the bone pressing on the frontal lobe and the third convolution, as in a case of rupture of a branch of the middle meningeal artery, from stellate fracture of the parietal bone, associated with right-sided hemiplegia, but with retention of consciousness, reported by Malichecq and quoted by Professor Lohmeyer (*Langenbeck's Archiv*, vol. xiii., 1872, p. 309). Aphasia, however, is a sufficient cause for refraining from operation, as it depends, in the great majority of instances, on deeply-seated trouble of the left side of the brain, particularly the third frontal convolution or some part of the corpus striatum. These structures are usually damaged by direct contusion or laceration, and, although effusion

in their immediate neighbourhood may exercise an inhibitory influence upon them, I do not find that the motor ganglia of speech are ever paralyzed by extravasation on the dura mater or in the sac of the arachnoid, unless the blood has trickled down into the anterior cranial fossa and compressed the base of the anterior lobe. In a case of this kind a surgeon would scarcely think of attempting to remove the clot. If not absolutely impracticable, the operation would at least be highly embarrassing and difficult.

2. COMPRESSION FROM EFFUSION OF PUS.—The formation of pus within the cavity of the cranium is by far the most frequent source of compression of the brain, not less than six-tenths of all cases being due to it. Thus, an analysis of 100 examples of cerebral compression shows that 40 depend upon depressed bone and extravasated blood, and 60 upon effusion of pus; of which 3, or 5 per cent., are instances of matter between the bone and dura mater; 15, or 25 per cent., of suppurative meningitis; and 42, or 70 per cent., of abscess of the brain-substance.* Such is the proportion which these lesions bear to each other from an examination of upwards of two hundred cases.

It is thus to be perceived that matter may form in the same situations as extravasations of blood, but it is not easy to determine by which of these separate conditions the symptoms are induced. They are so often combined that it is rare to find pus on the surface of the brain without coexisting abscess of its substance, or matter on the dura mater without diffuse suppuration of the arachnoid or inflammation of a sinus. It is for these reasons that this group of cases is attended with so high a mortality, and also that the symptoms are so variously intermixed.

But the case may run its course without there being any marked indications of serious mischief, as it is not very uncommon for a pretty extensive abscess of a lobe, or even entire hemisphere, to awaken no symptoms of compression until the patient is on the very verge of dissolution. Pirogoff (*Grundzüge der Allgemeinen Kriegschirurgie*) alludes to a singular illustration of this fact, that was the subject of widely different opinions, none of which, however, were correct.

The man was perfectly conscious, suffered from no particular cerebral symptoms, but, whenever he assumed the upright posture or sat up in his bed, he was attacked with violent vomiting. This state of things continued for weeks, until he fell into sudden stupor, and died shortly afterwards. Dissection disclosed an abscess of the middle lobe as large as a hen's egg. The same is true of suppurative meningitis. Jos. R., 151st New York Vols., was struck by a ball which inflicted a scalp-wound and contused the bone. He did well until the seventeenth day, when sudden convulsions and coma set in, for which five crowns of the trephine were applied by Surgeon Smith, with the effect of evacuating some matter from between the bone and dura mater. The convulsions ceased, but the stupor continued, and death ensued in twelve hours, when diffuse inflammation of the dura mater and arachnoid were discovered. (*Circ. No. 6, S. G. O., p. 10.*)

Whatever may be the situation of the pus it induces *symptoms* which

are common to all, although they vary in number and intensity. At first the man suffers from headache; is intolerant of light and noise; pulse quick and hard; skin hot and dry; pupils contracted; tongue coated; appetite impaired; and nausea and vomiting are frequent. As the inflammation advances these symptoms increase, until rigors, alternating with flushes of heat; fever of a remittent type; feeble, irregular pulse; anxious and haggard expression of countenance, which is pallid, or of a yellowish tint; delirium, sopor, paralysis, and coma terminate the case. Dilatation of the pupils and slow pulse are, as a rule, only observed when the patient lies in a state of deep sopor. It is important to bear in mind that pus formations, when the skull is not opened, very rarely declare themselves before the sixth day after the injury, for the simple reason that traumatic encephalitis usually appears about the fifth day, although it may arise sooner, and has to run through its different stages before the suppurative crisis is reached.

It becomes a very important question in connection with operations to determine the *seat* of the pus, whether it is located between the skull and dura mater, between the membranes, or in the substance of the brain, but it is often very difficult to decide this point, particularly if patients are brought to the hospital in a state of insensibility. When, however, the man has been under the immediate eye of the surgeon from the date of the injury, thus affording him an opportunity to watch its progress and various phases, there will usually be no trouble in this regard, and there would be none whatever did these different lesions always exist as independent affections. I have studied this subject patiently and carefully, both at the bedside and by attentively examining and comparing numerous cases that have occurred in different campaigns, and have come to the conclusion that, although positive signs by which the differential diagnosis of the seat of the trouble is rendered certain cannot be enumerated, yet the period at which the symptoms set in after the injury, taken in connection with other phenomena, is of the utmost value in determining the true nature of the case. The following are the results at which I have arrived, and I would not hesitate to say which was the prominent affection, for they may all be combined, and base my diagnosis upon the subjoined groups of symptoms in any and all cases. My somewhat positive statements, it must be remembered, are founded upon non-penetrating injuries, and it is possible that a more extended experience may demonstrate that they are not altogether reliable. When there is an injury with free communication with the contents of the skull, suppuration sets in, of course, more rapidly.

Pus between the dura mater and the skull.—The symptoms never appear before the sixth day; rarely before the eleventh; and usually prior to the expiration of the second week, the average being the thir-

teenth day.¹ There is some apparent reason for the local collection, as a contused or lacerated scalp, with or without fissure or slight depression of the bone, or the death of the exposed and contused skull. When the scalp is merely bruised, a painful, circumscribed, puffy tumour, with distinct fluctuation, forms at the site of the injury. Incision into this denotes the separation of the pericranium from the skull by sanious pus; and, if the bone be necrosed, there can be little doubt that its inner table is also dead, and the dura mater covered to a limited extent with pus or dirty lymph, or ulcerated, or even gangrenous. When there is an open wound, it assumes an unhealthy appearance; its edges are swollen; the granulations are pale, and wither, and their discharge becomes scanty, acrid, and thin. The pericranium secedes, and the exposed bone is seen to be dry, discoloured, or dead, thus affording a pretty sure index of the condition of its inner surface and of the dura mater, in which simultaneous changes have been going on.

The symptoms which accompany these local alterations are not so well-marked as when the matter is more deeply seated. The patient is feverish; has frequent rigors, nausea, and fixed and gradually increasing headache; is drowsy and stupid; the memory is impaired; and there are occasional attacks of mild delirium. He lies quiet, or semicomatose; his sensibility, both special and general, is lowered, but not destroyed; pressure upon the wound will cause him to moan and carry his hands to his head; muscular spasms and paralysis are not so decided as in the more deeply-seated suppurations, if, indeed, they exist at all; somnolency is sometimes interrupted by convulsive movements; but hemiplegia is rarely to be looked for, spasmodic contractions and distortions of the facial muscles being more common. In a word, the state of the wound, the fixed headache, the partial stupor, and incomplete paralysis, are indicative of suppurative pachymeningitis.

Suppurative meningitis.—Inflammation of the dura mater may be communicated by contiguity of surface to the parietal arachnoid, and the cavity of the latter membrane become occupied with fibrinous or serous pus; and from the arachnoid, the morbid action may spread to the pia mater, the meshes of which are infiltrated with a sero-purulent fluid; or the inflammation of the latter structure may depend upon the extension of the inflammation to it from a lacerated or contused brain. In the latter case, the changes in the wound of the scalp do not necessarily ensue; but in the former, or when the arachnoid becomes affected through

¹ These data correspond very closely to those deduced from civil practice by Mr. Dease. He says, "I have seldom seen them—the symptoms—appear earlier than the eighth day, or later than the sixteenth or seventeenth; between the eighth and the sixteenth being in general the period most to be dreaded."—*Observations on Wounds of the Head*, etc. Dublin, 1760.

the dura mater, the soft parts and bone present the same appearances as in the case of pus seated immediately beneath the bone.

The symptoms of suppuration of the membranes never appear before the eighth day; are rarely delayed beyond the twenty-first; the average being the thirteenth day. The cephalalgia is general, intense, and of an excruciating nature; there are obstinate constipation and vomiting; the sensibility of the nerves of special sense is greatly exaggerated, as evinced by the excessive intolerance of light and sound; the pupils are contracted; the pulse is very frequent; the delirium is active, and often maniacal; and, as the disease progresses, general convulsions set in, which are followed by paralysis, with anæsthesia, dilated pupils, retarded pulse, and profound coma, all of which succeed each other more rapidly than in the former condition, and less rapidly than when there is an abscess of the brain. Dr. Todd says that rigidity of the muscles of the paralyzed limbs from the commencement of or soon after the attack is characteristic of purulent arachnitis or accumulations of matter in the subarachnoid space.¹ Confirmatory evidence of this statement is afforded by a case, observed by Dr. H. Fischer, of Berlin, of purulent arachnitis after fracture with depression of the right parietal bone, which had occasioned, in addition to other symptoms, paralysis and tonic spasm of the muscles of the left arm;² and by a case of gunshot contusion, without fracture, of the left parietal bone, recorded by Dr. John Ashhurst, Jr.,³ in which two or three slight convulsions, with sopor, occurred on the seventeenth day, and were followed by delirium, coma, and, on the day preceding death, spasmodic contraction of the muscles of the left side of the body. The arachnoid over the middle right lobe was acutely inflamed, presenting an abundant deposit of soft lymph, while the membrane of the left side was free. The brain beneath the necrosed bone was softened, and contained a small abscess about three-fourths of an inch from its surface.

The most reliable symptom of unilateral arachnitis is opposite hemiplegia,⁴ succeeding rigors, intense headache, elevation of temperature, vomiting, delirium, stupor, and convulsions, and followed by coma. The presence of Pott's "puffy tumour" of the scalp renders the operative prognosis more favourable than its absence, since it points rather to a

¹ Op. cit., p. 224.

² Langenbeck's Archiv, vol. vi. p. 605. 1865.

³ Amer. Journ. Med. Sciences, vol. 1. N. S. p. 388.

⁴ Unilateral arachnitis does not invariably produce opposite hemiplegia, but the importance of this symptom has been recognized by Dr. Wilks and Mr. Jonathan Hutchinson. In the paper, already referred to, at p. 53, the latter asserts that hemiplegia is the usual indication of arachnitis; and I am pleased to find that his conclusions, although deduced from civil practice, coincide with my own as to the fact of arachnitis being a more common result of fracture or contusion of the cranial bones, than the formation of pus between the skull and dura mater.

limited inflammation, or circumscribed collection of pus in the arachnoid sac; while its absence is indicative of diffused inflammation or sub-arachnoid effusion, due, probably, to primary lesion—contusion—of the central ganglia, or laceration of the cortex of the brain.

Abscess of the brain.—The symptoms never appear before the thirteenth day, and are most frequent between the fifteenth and twenty-seventh days, the average being the twenty-fifth. The cephalalgia is sudden in development, and of a dull, heavy nature, although it may be present from the commencement, and be intense when the exterior gray matter is involved; the special senses are suddenly perverted; the delirium is of a quiet character; sopor; one-sided convulsions, incomplete hemiplegia, and coma succeed each other more rapidly and more constantly than in the other forms of pus-effusion. The stupor is complete; the man seldom lies with his limbs outstretched, but he is curled up, so to speak, in his bed; general sensibility is utterly abolished, so that pressure on the external wound does not cause him to bring his hands to his head, although there may be automatic movements. In a word, profound coma, and total destruction of special and general sensation are characteristic of this condition. When the abscess bursts into a lateral ventricle, it is usually rapidly fatal.

The *treatment* of compression of the brain from effusion of pus is purely surgical; and all authors are unanimous in the opinion that, unless the matter be evacuated, the patient will die, although they are equally agreed that this measure holds out but little chance for life. Since pus is liable to be situated in several distinct localities, I shall consider the management of compression from this cause according to the position of the foreign formation, and illustrate the topic by a few practical cases.

When pus is seated *between the dura mater and the skull*, it is usually due to contusion of these structures by gunshot; but suppurative inflammation of the dura mater, which is the primary and principal element in the pus production, not the inflammation of the bone, as is taught by some surgeons, is often excited by the pressure of a sharp fragment of bone, a ball, or other foreign body, which proves a constant source of irritation. In these latter cases, it is obvious that the foreign substance, if recognized, should be removed; so that I shall confine my remarks to those cases in which there is no penetrating fracture or obvious presence of a foreign substance.

Very fortunately, suppurative inflammation of the dura mater is less common at the present day than it was several generations ago; at any rate, it is not often met with as a result of gunshot contusion of the bone and membrane, so as to call for the operation of trephining. When it is, experience has shown that its early evacuation is positively called for. Mr. Pott, *Injuries of the Head*, London, 1768, was remarkably successful in his operations, not less than five out of eight cases having recovered. In all of these, the inflammation of the dura

mater was coincident with contusion and death of the bone without fracture, and the trephine was resorted to when the inflammation was circumscribed, or before it had extended to the subjacent arachnoid. This alone is the secret of the great success which attended the procedure in the hands of the eminent British surgeon. If at the first operation little pus was found, and the symptoms increased, the instrument was again applied and a free escape for the fluid thus secured.

At the present day, however, recovery from operation is not so common. A recent writer remarks that he has repeatedly seen the matter evacuated by the trephine without benefit; but he inculcates the doctrine "to operate only where, in addition to fever and rigors, and to the local signs about the bone, there are also well-marked brain symptoms, coma, and, better still, hemiplegia." Now if the surgeon waits until these symptoms set in, the chances of a successful issue are reduced to a minimum, since they depend upon arachnitis or abscess of the brain. One need not wonder, therefore, that recoveries are unknown under these circumstances, although we must do the writer the justice to say that he advises opening the skull as the only chance left. Mr. Pott did not wait for these fatal symptoms. For him, a slight blow upon the head, followed by the formation of pus between the pericranium and bone, pain, restlessness, languor, febrile action, slight rigors, cephalalgia, and quick pulse, were sufficient indications that the dura mater was seriously involved, and that the pus should be let out. I have examined the histories of the cases that have occurred in late wars; their symptoms do not differ from those presented by cases a century back; the only difference, in my opinion, being that Mr. Pott was right in his treatment, and that modern surgeons are very decidedly wrong in delaying operative interference until it is too late to be of any avail.

I have never met with compression of the brain from the presence of pus in this situation, although I have had thirteen examples of more or less extensive necrosis of one or both tables of the contused skull, brief descriptions of which are appended in the foot note.¹ I am obliged, there-

¹ In 9 of these cases there was exfoliation of the outer table alone, the lesion being mere contusion in 3; contusion with simple fissure or grooving in 3; contusion with impression in 1; and fissure with slight depression of the inner table in 2. The period of separation varied from 12 to 132 days, the average being 42 days. In 4 instances portions of both tables came away, and in 2 there was concomitant fissure. In one of these the external table had a portion scooped out and exfoliated before the larger and deeper piece was loose. The period of separation varied from one to three months, the average being the 59th day. In one instance I extracted a portion of the parietal bone as large as the palm of the hand on the 93d day after the injury, and the pus could be seen to issue from the fissure at each pulsation of the brain. In 4 cases there were signs of slight contusion of the brain before I saw the patients, as denoted, in the first, by partial paralysis of motion and sensation of the opposite arm for one week; in the

fore, to look elsewhere for illustrations of the advantages of early over late operation, and the results of simple antiphlogistic treatment; and I risk the accusation of dwelling at unnecessary length on this subject, because some writers state that opening the skull is not proper, even if the presence of pus can be pretty clearly determined, since the lesion is necessarily fatal. Examples of compression from abscess of the dura mater, moreover, are not so readily found in the reports of campaigns, that abstracts of cases will not prove practically interesting to the younger members of the profession.

John E., aged 25, on the 16th April, received three small lacerated wounds on the left side of the head from the explosion of a magazine. The wounds had healed, and he was apparently well, when, on the 14th and 15th of May, he remained in bed, being drowsy, stupid-looking, and complaining of violent cephalalgia. On the following day, he lay in a state of partial coma, with the lids half closed, but was sensible when aroused, and answered questions in monosyllables. The skin was hot, the pulse quick and hard, the brows knit, the right side of the face distorted, and the angle of the mouth drawn downwards, while the headache was more severe. There was a small swelling with distinct fluctuation at one of the wounds, which presented the characteristic features of Pott's puffy tumour. On incising this, the pericranium was found separated from the depressed parietal bone by sanious pus. Several portions of the bone were removed with Hey's saw, and others were elevated. The dura mater was inflamed, and coated with pus, but was entire. The symptoms gradually disappeared, and the man was discharged to England on the 5th of July. (*Med. and Surg. Hist. of the British Army in the Crimea*, vol. ii. p. 294.)

In this instance, which is an excellent illustration of the correctness of Pott's views as to trephining for this state of things, life was preserved by timely interference. Had the operation been delayed for a short time, the quantity of matter would have increased; the morbid action have extended more deeply; convulsions, hemiplegia, and coma set in; and death ensued. But primary operation is not always marked by so happy a termination.

Thus, in the case of Hancock (*ibid.*, p. 296), of the 21st Regiment, pus was evacuated from beneath the depressed bone by the trephine, as soon as symptoms had set in, with temporary relief; but death occurred on the eighth day after operation from arachnitis and abscess of the brain. In the case of Scribins (*ibid.*, p. 296), which was one of fissure of the external table with depression of the internal, jaundice and fever were pronounced on the third day after trephining, and life was extinct five days later. Section disclosed pus on the surface of the brain, and a large abscess in the corresponding hemisphere.

The following successful example of early interference from the practice of Dr. P. H. Watson (*Edinburgh Medical Journal*, July, 1870, p. 43), in the Crimea, also illustrates an interesting diagnostic feature.

Rigors, headache, flushed face, slow pulse, somnolency, and delirium occurred some weeks after what was supposed to be merely a scalp injury. "On laying open the wound to examine the skull at one point where the bone was

second by anæsthesia of all the limbs for several days, which persisted in one leg for three weeks; in the third, the symptoms were almost precisely similar, while, in the fourth, there was convergent strabismus of both eyes for four months, when I lost sight of the man.

bare, a smooth tuft of hair like a hair-pencil stuck right up from the surface, being held and wedged in that position by a minute fissure of the bone, which was so close that, but for the tuft of hair, it could not be recognized." The application of the trephine evacuated an abscess, and disclosed a thin flake of lead, which had been shaved off the passing ball, lying on the dura mater.

The pus may be let out without a resort to the trephine.

An officer, whose case is reported by Görcke, was struck by a musket ball, which caused a depressed fracture of the parietal bone. The alarming symptoms, which arose on the tenth day, ceased on evacuating a quantity of pus by breaking off a portion of the contused bone by means of the point of a pair of forceps inserted into the fissure at one side of the depression. Recovery was complete. (*Rust's Magazin*, Bd. xv. p. 347.)

When coma, convulsions, or hemiplegia are lighted up, the operative prognosis is decidedly unfavourable, since these symptoms indicate abscess of the brain or arachnitis, as in the succeeding illustrations.

An officer of the 47th Regiment received a gunshot fissured fracture of the skull without depression. In spite of active treatment, signs of inflammation of the meninges occurred, followed at the end of about three weeks by coma. The trephine let out a considerable quantity of pus from beneath the bone, the dura mater being uninjured. Immediate relief ensued, and almost complete consciousness was restored. Stupor, however, gradually reappeared, followed by epileptiform convulsions, and death in five weeks from cerebral abscess. (*Med. and Surg. History of British Army in the Crimea*, vol. ii. p. 289.)

A private of the 151st New York Volunteers had apparently recovered from a gunshot wound of the scalp, inflicted Nov. 17, 1863, when, at the expiration of twenty-eight days, he was suddenly seized with convulsions, which were succeeded by coma. Surgeon D. P. Smith removed five circles of the inflamed and contused bone, thereby affording free vent to matter immediately beneath it. Convulsions did not recur; but the coma continued, and the case terminated fatally in twelve hours. Diffuse inflammation of the dura mater and arachnoid were present. (*Circular No. 6*, S. G. O., p. 10.)

A young man was struck on the occipital region by a ball, which inflicted a scalp wound. There were no special symptoms for a fortnight, when unrest, ptosis, and partial one-sided paralysis of motion and sensation were observed. Trephining at the seat of the injury was delayed until ten days later, when a large amount of pus was evacuated, and a detached portion of the inner table of the skull lying on the dura mater was removed. Temporary improvement followed; but the man died on the sixth day. The arachnoid sac was filled with pus and false membrane, and the brain was softened below the seat of the lesion. (*Denonvilliers, Compendium de Chirurgie Pratique*, t. ii. p. 573.)

Finally, when pus has formed on the dura mater, and nothing is done in the way of operative interference, the case is hopeless. The subjoined example shows the most frequent source of death, where the bone is merely contused and matter is seated beneath it. It is taken from Stromeyer (*Maximen der Kriegsheilkunst*, 2d ed. p. 334), and, unless I greatly mistake, the early removal of a disk of bone might have preserved life, while the antiphlogistic treatment hurried on the fatal issue from pyæmia.

On the 7th of April, 1849, a young soldier received a grazing gunshot wound of the scalp, which laid bare, but did not lacerate the pericranium. For ten days he progressed well, when he lost his appetite, felt nauseated, was feverish, and suffered from frontal headache. The wound, however, retained its healthy appearance, and his attendant mistook these symptoms for gastric disturbance. Stromeyer saw the man on the 22d, when the wound presented the usual changes; he had suffered from vomiting; was very restless; anxious, and

wakeful; and the countenance had become haggard. Purulent meningitis was diagnosed, ice and large numbers of leeches were applied to the head; and calomel and mercurial inunctions were rapidly pushed. On the same evening, delirium and coma supervened; on the following morning, he had a severe chill; and twenty-four hours later, death terminated the case. Dissection revealed the pericranium and dura mater separated from the contused bone by pus, clots of blood, and matter in the longitudinal sinus, and purulent exudation over both hemispheres of the brain.

In a second case, observed by Dr. B. Beck (*Die Schusswunden*, p. 99, and *Langenbeck's Archiv*, vol. ii. p. 547), at the battle of Vincenza, a gunshot wound of the scalp, without apparent injury of the parietal bone, gave rise to immediate symptoms of compression. Through energetic antiphlogistic treatment for four days the signs of cerebral irritation diminished, but they afterwards increased and carried off the patient. The external table of the bone was fissured, while the internal was broken, four pointed spicules pressing on the dura mater, which was covered with pus. A circumscribed portion of the brain was also softened. Trephining would probably have been successful here, but the instruments were not at hand.

Such are the histories of primary and secondary operations, and purely antiphlogistic or expectant treatment in this class of cases. They demonstrate that, when the trephine is applied early, the man may be saved; if it be applied late, there is little chance of success; and, if it be withheld altogether, death is the inevitable result. In addition to the instances already quoted of evacuation of pus beneath the cranium, I have to add two successful cases of trephining, one in the Italian war of 1859, reported by Demme (*Militär-Chirurgische Studien in der Italianischen Lazarethen von 1869*, abth. ii. p. 74), the other in the Bohemian campaign of 1866, recorded by Kocher (*Beobachtungen in der Lazarethen der Main-Armee des Feldzuges von 1866*), and a fatal issue narrated by Appia (*The Ambulance Surgeon*, Edinburgh, 1862, p. 171). These comprise all the cases of which I have any knowledge; so that 11 operations afford 5 recoveries, or a proportion of 45 per cent. Larrey's case, referred to hereafter, is one of cure after trephining for the removal of a ball and a quantity of pus seated on the dura mater; but he also describes an instance of pus forming beneath the skull in consequence of a superficial cut by sabre, in which excision of a circle of bone afforded temporary relief, but death ensued from pyæmia. (*Campaigns*, Amer. ed. p. 144.) These additional cases influence only very slightly the rates of recovery; while the results of all cases show that the opinion of those surgeons who hold that operative interference is futile is incorrect, and that, however true it may be that recovery is the exception in civil practice, trephining for gunshot injury compares favourably with other recognized excisions.

In civil cases, it is asserted that the effusion on the dura mater coexists with arachnitis: hence surgeons are almost unanimous in the opinion that a successful issue after its evacuation is scarcely known at the present day. It is interesting, therefore, to refer to the case of a student who was struck on the head with a hammer. For three weeks he suffered from severe headache, when insomnia set in. Examination disclosed a wound

through the skull, and a probe came in contact with a piece of loose bare bone. On the removal of this by Dr. P. H. Watson pent-up matter was discharged. (*Edinburgh Med. Journ.*, July 1870, p. 44.) Allusion may here be made to a rare example of prolonged collection of pus beneath the cranium, recorded by Professor N. R. Smith. It was one of exfoliation of a portion of the parietal bone after a blow from a stone, followed by a fistulous opening, smaller than a quill, and surrounded by granulations which never closed for twenty years. Whenever the flow was impeded, pain and vertigo were occasioned. The trephine evacuated upwards of three ounces of fluid. (*Baltimore Med. Journ.*, Dec. 1870.)

Effusion of pus into the *arachnoid sac* is indicated by the immediate rising of the dura mater, which has lost its pinkish, silvery hue, into the hole made by the trephine, where it forms a tense swelling that is devoid of pulsation. Attention has recently been called to this absence of pulsation, as something novel, by Professor Roser (*Archiv der Heilkunde*, Heft 6), but this phenomenon has for years been a recognized and characteristic symptom of accumulation of pus beneath the dura mater; and was long since prominently insisted upon by Mr. Guthrie. (*Op. cit.*, p. 366.)

This bulging of the dura mater may be regarded as a favourable sign, since it denotes that, instead of the matter being diffused over the surface of the brain, it is collected into circumscribed abscess, through adhesion of the parietal and visceral layers of the arachnoid at the limits of the effusion. In the former event, there is no hope; in the latter, life may be saved by freely incising the swelling, and giving vent to the pent-up matter. Upwards of a century ago Schmucker proved the propriety of this procedure.

A soldier was trephined for a gunshot injury of the frontal bone; and the ball, along with a portion of the depressed inner table and some extravasated blood, removed. On the nineteenth day the dura mater rose into the trephine-hole, and fluctuated. A small puncture was followed by the escape of two ounces of whitish lymph (*sic*); and three days subsequently, the delicate opening having closed, a crucial incision gave vent to an ounce of a similar fluid. The wound was now kept open, and the man recovered. (*Chirurgische Wahrnehmungen*, bd. i. p. 170.)

Guthrie (*op. cit.*, pp. 366-368), after the battle of Toulouse, incised the dura mater and evacuated pus in two cases, and one died.

An officer was struck on the occipital protuberance by a musket ball. Symptoms of irritation of the brain having set in, Giersch applied the trephine under the supposition that there was fracture of the internal table, but the bone was found to be sound, and there was slight purulent effusion beneath it. On removing the dressings a few hours subsequently, the prominent dura mater was punctured, and a considerable amount of bloody matter evacuated. Rapid and complete recovery ensued. (*Rust's Magazin für die Gesamte Heilkunde*, bd. ii. p. 127.)

The records of the more recent campaigns contain only a few examples of operation for abscess of the cavity of the arachnoid. I am not aware that it was practised during our late war; but it was resorted to by Beck

(*op. cit.*, p. 133), in Schleswig, without benefit; by Mr. Cowan (*Williamson, Military Surgery*, p. 36) in the Crimea; his patient died; by a surgeon (Demme, *op. cit.*, abth. ii. p. 75) at the St. Gaetano Hospital, Brescia, 1859, but the man was so much exhausted that death was inevitable; and by Pirogoff (*op. cit.*, pp. 155 and 185), in the Crimea, with success. The last case was one of coma without paralysis consequent upon a complicated fracture of the frontal bone. The trephine was applied, the dura mater opened, and a spoonful of matter evacuated. Consciousness was at once restored, the man answered properly all questions, and was well in two months. All these cases were examples of trephining for gunshot injury, save that of Beck, which was due to superficial sabre-cut of the bone; so that, if the few instances that I have here recorded be regarded as exponents of the mortality of incising the dura mater to give exit to pus in army practice, it will be found to be in the proportion of 50 per cent., four out of the eight having succumbed.

No case is recorded of recovery from effusion of pus into the arachnoid cavity without its having been let out; it is never absorbed in this situation. On the other hand, if a free incision be made into the dura mater so as to admit of its ready escape, one-half of the patients, as I have just shown, fight their way through. The necessity of the operation is, therefore, not to be questioned. In civil life, too, success has attended the procedure, of which the following are striking illustrations:—

Lohmann (quoted by Bruns, *op. cit.*, p. 926) trephined a man on the third day after a blow from a ten-pin ball, and removed a clot of upwards of four ounces' weight. Eight days subsequently, the symptoms of inflammation increasing, the dura mater was punctured and a considerable quantity of matter evacuated.

A man struck his head against the corner of a writing-desk, and suffered from severe headache for several months. Mursinna (*ibid.*, p. 937) removed three circles of the occipital bone and opened the dura mater, with the effect of giving vent to a very offensive yellowish fluid, which he regarded as a collection of disorganized blood.

De La Peyronie (*Hist. de l'Acad. Roy. des Sciences*, 1744, p. 212) trephined the parietal bone of a lad for symptoms which made their appearance on the twenty-fifth day after a blow from a stone. On incising the inflamed dura mater, three ounces and a half of pus, which extended by the side of the falx down to the corpus callosum, escaped.

Mr. Dumville (*British Med. Journ.*, vol. ii. p. 743, 1858), of Manchester, removed a circle of the denuded frontal bone, for supposed abscess of the dura mater, three weeks after a scalp wound. The membrane was inflamed and perforated at one point, from which, after the insertion and withdrawal of a probe, stinking matter spirted out.

A man, aged 37 years, was struck over the supra-orbital ridge, and marked symptoms of compression set in at the end of three weeks. Professor Hughes applied the trephine at the injured spot, and found fragments of the inner table of the frontal bone depressed on the dura mater, without involvement of the outer table. Upon incising the dura mater and evacuating a quantity of pus, there was an immediate return to consciousness. (*Iowa Med. Journ.*, 1868, p. 34.)

Dr. Watson (*Edinburgh Med. Journ.*, July, 1870, p. 40) narrates the case of a girl aged eight years, in whom symptoms of phrenitis followed a blow on the forehead from a piece of road-metal. At the expiration of nine months, a probe passed to the depth of $2\frac{1}{2}$ inches into an intramembranous abscess,

through a small aperture at the left frontal eminence. Whenever the opening closed, the child became unconscious and convulsed, but she was free from symptoms at other times. A crucial incision of the dura mater, after trephining, permitted the escape of a wineglassful of pus.

In a very similar case, occurring in a youth sixteen years of age, there was a fistulous opening in the left parietal bone, which discharged sanious fluid. On cessation of the discharge, signs of compression set in. Roux (*Archives Générales de Médecine*, t. 24, 1830, p. 280) applied the trephine, enlarged the hole in the dura mater, and evacuated a large quantity of matter.

Abscess of the brain may result from any form of injury of the skull, and is certainly fatal unless it be evacuated. Dissection of numerous cases has demonstrated that, provided life has been spared for a sufficient length of time, the brain frequently makes efforts to rid itself of the foreign fluid by discharging it at the nearest point, as into the lateral ventricles or the sac of the arachnoid. Rare cases have also been reported, in which it is highly probable that the sudden and abundant escape of pus from the ear nose, or orbit, some weeks after injuries of the head, was due to the rupture of cerebral abscess and its discharge through the petrous portion of the temporal bone, the cribriform plate of the ethmoid, or a fractured orbital portion of the frontal bone. I have endeavoured to show that pain in the head and signs of compression, accompanied by febrile movement, occurring some days after a local injury, indicate inflammation of the contents of the skull, and that, under these circumstances, it is proper to apply the trephine. If no pus be found on the dura mater, but the state of the membrane indicates matter beneath it, it should be opened. Should the symptoms be not relieved, the inference is clear that the pus is seated in the tissues of the brain, and the question of letting it out naturally depends upon its existence and position. Of the individual symptoms of cerebral abscess the best are defined and intense pain, corresponding with the local lesion, and the occurrence of limited hemiplegia and convulsions, some time between the fifteenth and twenty-seventh days. Headache ordinarily corresponds to the seat of the abscess, and this is the most important sign of its position; while the more the pus encroaches on the gray cortical substance, the more weighty and numerous will be the phenomena. With this history the surgeon is warranted in opening the skull and incising or puncturing the brain. Special symptoms may be of assistance in determining the situation of the abscess. Thus, aphasia associated with right-sided paralysis, points to abscess in the vicinity of the walls of the left fissure of Sylvius, at least such is the history of several cases after gunshot, quoted by Lohmeyer. (*Op. cit.*, pp. 321, 322.) In one, trephined by Petruschky, there was an abscess of the left frontal lobe which had destroyed the second and third frontal convolutions, while in two others the same parts were extensively destroyed in the first and in the second, there was, in addition, a large abscess of the left hemisphere, which corresponded to the site of the wound and extended to the cornu Ammonis. In the cases of Detmold, Weeds, and Maisonneuve, referred

to below, the loss of speech depended, in two, upon abscess of the frontal, and, in the third, upon abscess of the middle lobe. In this state of affairs I can see no objection to cutting into the brain. The operation can scarcely aggravate the case. There is nothing to be lost, while much may be gained in the way of prolonging or even saving life. Several instances are on record in which trephining, or further procedure after that operation, might have resulted in recovery, of which the following are selected as illustrations:—

In an officer, under the charge of Mr. Dease, secondary symptoms clearly pointed to an abscess of the brain, and its existence was confidently predicted by that surgeon, who desired to open the skull and evacuate it. In consultation, however, his opinion was outweighed, and dissection disclosed a collection of four ounces of matter and clotted blood within one-tenth of an inch of the surface of the brain. Hennen (*op. cit.*, Case XLVIII.), who relates the case, regrets that relief was not attempted.

Roux (Chassaignac, *Plaies de Tête*, p. 192) went so far as to incise the dura mater, but found no pus. The symptoms of compression continued and increased, and a large abscess was found post-mortem below the trephine-hole, so superficially seated that its evacuation would have been easy, and, possibly, beneficial.

De La Peyronie (Sabatier, *Médecine Opératoire*, t. ii. p. 65, 1832) trephined a man, and let out a large quantity of pus from beneath the cranium. The symptoms were relieved temporarily, when the dura mater was cut open without result, but incising the brain was not permitted. Post-mortem examination disclosed an abscess at the depth of about one-third of an inch below the artificial opening.

The removal of pressure over the abscess may even suffice to permit the pus to make its way to the surface, as in the subjoined instances:—

A child nine years of age, suffering from compound depressed fracture of the frontal bone, was trephined by Petit. (*Traité des Maladies Chirurgicales*, t. i. p. 91, 1790.) Fever, with headache, set in on the night of the fifth day, and on the following day the discoloured and distended dura mater bulged into the opening. On being laid open, a tablespoonful of brown, fetid fluid escaped, but the symptoms increased until the night of the eleventh day, when the rapid improvement disclosed that a large abscess had burst and saturated the dressings with offensive matter. In two months the cure was complete.

"In a case of this description," writes Professor Pancoast (*Treatise on Operative Surg.*, 2d ed., p. 106), "on which I operated during the winter of 1843-4 before the class of the Jefferson Medical College at the Philadelphia Hospital, the altered dura mater puffed up through the opening made by the trephine. On incising this, the soft pultaceous cerebral substance pouted through the orifice, and gave to the finger a distinct feeling of fluctuation below." As life was not in immediate danger nothing further was done, and the abscess opened spontaneously on the following day, with the effect of relieving the coma to a considerable extent. The patient continued to improve, walked about the wards, and conversed rationally, the opening in the meanwhile discharging more or less pus. At the end of sixteen days the flow ceased altogether, the delirium and coma returned, and the man died. Dissection showed that the orifice in the dura mater was too small, and blocked up with fungous granulations from its margins. The cavity of the abscess had refilled and communicated with the posterior horn of the opposite lateral ventricle.

Schmucker (*Vermischte Chirurgische Schriften*, Bd. i. p. 283) narrates the case of a grenadier who fell and struck his head against the corner of a stone, whereby a compound depressed fracture of the frontal bone was produced. On the following day trephining, with removal of the splinters and elevations of the bone, restored consciousness. The patient was in the best of spirits

until the fifth day, when feverish symptoms set in, followed in twenty-four hours by bulging of the dry and brown dura mater into the trephine-hole. Puncture evacuated upwards of a tablespoonful of laudable pus from a superficial abscess of the brain. The symptoms disappeared, particles of the brain tissue were cast off, and the patient was well in two months.

Two remarkable cases are on record, in which abscess of the brain was diagnosticated, and the surgeons were bold enough to make numerous incisions in the brain with a view to its evacuation. In that of Dr. Detmold (*Amer. Journ. Med. Sci.*, vol. xix., N. S., 1850, p. 86) the symptoms were relieved and life preserved for seven weeks, while in the case of Maisonneuve (*Union Medicale*, 1853, p. 48) the matter was not reached, although the post-mortem examination showed, that, had the fifth puncture been one centimetre deeper, the abscess would have been evacuated.

The following case reflects the greatest credit on the operator in regard to the diagnosis and treatment :—

An officer was struck by a pistol-ball which grooved the outer table of the left frontal bone. Marked symptoms of encephalitis set in on the tenth day, but they yielded to general measures. On the twenty-third day, in consequence of excesses of diet, rigors, intense cephalalgia, and other ill-boding signs, declared themselves, and were followed in seventy-two hours by convulsions, and, later, by aphasia with right hemiplegia and coma. On the twenty-ninth day after the injury, Surgeon J. F. Weeds, of the army, trephined over the left frontal eminence, and found a small scale of the inner table lying loose on the slightly lacerated dura mater. A knife was passed into the substance of the brain, and half an ounce of greenish, fetid pus evacuated. The symptoms of compression disappeared in ten hours, and the patient recovered. (*Nashville Journ. Med. and Surg.*, April, 1872, p. 156.)

That the practice of trephining is the correct one, where symptoms are lighted up after a punctured wound, is shown by the following case :—

A peasant, aged twenty-four years, was injured on the 23d of February, but concealed his condition until the 9th of March, when Dr. Krauss found a four-cornered punctured wound in the anterior superior angle of the parietal bone, through which a probe passed into the skull to the depth of four lines. His general condition was that of great stupidity; he answered questions with difficulty; the pulse was fifty; but convulsions were absent. On the following day, removal of a circle of bone and enlargement of the hole in the dura mater were followed by the evacuation of a large abscess of the substance of the brain. The man recovered. (Quoted by Bruns, *op. cit.*, 746.)

Circumscribed collections of pus, resulting from the irritation of foreign bodies, seated superficially or deeply, but without an external communication, have also been successfully tapped. The following examples demonstrate the wisdom of operating as soon as symptoms set in.

A young man was struck on the head with a knife, the wound healed, and there was merely intermittent neuralgic pain about the scar. He was admitted into the Hôtel-Dieu, upwards of two years subsequently, for sudden stupor with febrile action, and the point of the knife-blade was found sticking in the bone. Dupuytren¹ applied the trephine; but the coma was not relieved, and opposite hemiplegia appeared. The dura mater was now opened, and a bistoury carried into the substance of the brain to the depth of one inch, when a large quantity

¹ Leçons Orales de Clin. Chirurg., 1839, t. vi. p. 146.

of pus escaped. The symptoms disappeared that night, and the patient gradually recovered. Additional recoveries from abscess complicated by the presence of knife-blades, in which, however, the symptoms set in in a few weeks after the injury, are narrated by Dr. Moritz¹ and Dr. Renz.² In the case of the latter surgeon the pus was evacuated by aspiration. Lafaye³ cured a man in whom the trouble was due to the head of an arrow imbedded in the brain.

There are not a few cases on record of recovery from abscesses complicated by the presence of small projectiles. The following are illustrations of this state of things attested by living witnesses:—

Dr. Hutchison, of Brooklyn, amputated the leg of a soldier, one month after compound fracture of both bones by shell. He had also received an injury of the skull from a bullet. While he was unconscious, the head was examined, and several pieces of the necrosed parietal bone removed, along with a fragment of ball of very irregular shape, which appeared to be lying in the cerebrum. Its extraction was followed by the escape of two drachms of healthy pus from an abscess in the substance of the brain. He recovered without an unpleasant symptom. (*New York Med. Journ.* 1866, p. 217.)

A soldier suffered from a gunshot fracture of the skull received in the Crimea. Some weeks subsequently, an aperture was discovered in the vault of the cranium too small to admit the finger, from which pus mingled with blood-clot and broken-down brain tissue was escaping. He was almost imbecile, and, although a mere lad, he looked old, and was much emaciated. Dr. Watson (*Edinburgh Med. Journ.*, July, 1870, p. 44) trephined. A considerable abscess was evacuated, and a ball removed from the left hemisphere.

Finally, the abscess may have an external communication, but the opening in the skull or membranes be too small to admit of the free escape of its contents, as in the case of Pancoast; under these circumstances the pus accumulates, lights up signs of compression, and proves fatal unless free vent be afforded. The indication here is to trephine at the site of the opening, and that this is the correct practice is shown conclusively by several cases, not gunshot, however, quoted by Bruns (*op. cit.*, pp. 1014–1018), and by one under the charge of Dr. Middeldorpf. In the latter the discharge was reinstated by chiselling away portions of the bone so as to make an opening of sufficient size to admit the point of the index finger. The patient, a male, 23 years old, was well in two months and a half. (*Schmidt's Jahrbücher*, Bd. 143, 1869, p. 203.)

3. COMPRESSION FROM DEPRESSED BONE.—The symptoms may be immediate; but I have never seen an instance in which this state was due purely to this cause; and I believe that instantaneous symptoms are less frequent than is generally supposed. With the view of determining this point, I have examined 180 recorded examples of depressed fracture from gunshot, which were attended with, or followed by, compression, and find that the signs are immediate in only 30, or 16.66 per cent., or in the proportion of one to every six. Inspection of the fatal cases disclosed, in the great majority of instances, concomitant contusion of the brain, and in many of those that recovered, the symptoms were mixed, and pointed to

¹ Quoted by Bruns, *op. cit.* p. 1006.

² Schmidt's Jahrbücher, Bd. 138, 1868, p. 259.

³ Sabatier's Med. Oper., t. i. p. 64.

that complication. Hence the inference is clear that contusion or laceration of the substance of the brain, and not the depressed bone, is the source of the symptoms. In the remaining 150 cases, the compression came on at a period which varied from a few hours to several days; so that it is of the utmost practical importance that the surgeon should remember that depression of the skull may, and usually does, excite remote phenomena, when no signs of compression have immediately followed the injury.

But the surgeon must not allow himself to be seduced into the idea that these late symptoms depend solely upon the displacement of the bone, since nothing can be further from the truth. An analysis of the above 150 cases indicates that the more or less remote signs of compression were due exclusively to the depressed bone in only 20 per cent. of the whole number; that they depended upon displacement, associated with local extravasation of blood, in 8 per cent.; while they were due to combined collection of pus between the bone and the dura mater in 3.33 per cent., to simple arachnitis in 1.33 per cent., to suppurative meningitis in 17 per cent., and to abscess of the brain in nearly 51 per cent.

I think I am warranted in stating that it is not impossible to distinguish upon which of these several pathological conditions the symptoms depend by noting, in connection with other signs and the history of the case, the date of their appearance.

When the compression sets in at a period varying from thirty minutes to eighteen or twenty hours, there having been a lucid interval, it is due to effused blood, which starting from the seat of depression, gradually extends over the dura mater, until a clot of sufficient size to awaken symptoms is formed. If headache, more or less pronounced, febrile movement, exalted nervous irritability, as indicated by intolerance of light and of sound, and slight delirium, or other signs, appear at any time between the second and sixth day, seventy-two hours being the average, they are induced by hyperæmia of the brain and its membranes, this state, unless held in subjection by appropriate measures, passing rapidly into that of inflammation, and there will be found either depression, or the trifling displacement will be combined with a small local clot. When the symptoms of cerebral disturbance depend upon the formation of pus, they are usually ushered in by rigors, more or less defined, and set in at a later period. Thus, as I have shown at a preceding page, in suppurative pachymeningitis they do not appear before the sixth day, rarely before the eleventh, and generally prior to the expiration of the second week, the average being the thirteenth day. Suppuration of the arachnoid and pia mater does not disclose itself before the eighth day, but usually within the second, and rarely after the third week, the average being, as in the former instance, the thirteenth day. When symptoms are awakened by intracerebral abscess, the most frequent of all the causes of secondary compression, they

do not manifest themselves before the thirteenth day, may be delayed for months, and are most common between the fifteenth and twenty-seventh days, the average being the twenty-fifth. In two cases, which seemed to be examples of simple arachnitis, the phenomena were apparent, in one on the eighth day, and in the second on the forty-third day, so that no general law can be established in regard to this extremely rare occurrence.

The above data include those cases in which the inner table of the skull is depressed more extensively than the outer, those of depression of the inner table alone, and those in which spicules of bone penetrate the meninges or the brain; and they indicate that primary meningitis, encephalitis, or meningo-encephalitis are not to be anticipated when the contents of the skull are not exposed. When, on the other hand, there is a compound comminuted fracture, and splinters of bone are driven into the membranes or the brain, primary meningitis or encephalitis is the rule, and may prove fatal within forty-eight hours after the infliction of the injury, although, in rare cases, the symptoms do not set in until the second week.¹

The *treatment* of compression from depressed bone is still a matter of much dispute. That a man may recover from a very considerable and very unequal displacement of the tables of the skull is attested by numerous examples;² but that such cases survive in greater proportion than those in which the pressure has been relieved by the resources of art, is another and a highly important question, which has not been sufficiently examined by writers on army surgery. I have looked into the particulars of the management of 224 depressed gunshot fractures of the skull,³ and find that, in 90, operative measures, under which are included the use of the trephine, elevator, saw, and simple extraction of fractions of bone with

¹ In an elaborate essay, entitled, *Klinisches und Experimentelles zur Lehre von Trepanation*, *Langenbeck's Archiv*, vol. vi. pp. 595-647, with which I met after the above sentence was penned, Dr. H. Fischer, of Berlin, states his belief that primary symptoms do not ensue from foreign bodies when the skull is not opened, and that suppurative inflammation is quickly induced by movable penetrating substances, as detached spicules, when the brain and its membranes are exposed, although fixed spicules that pass into the brain through the dura mater, under the same circumstances, incite meningitis more slowly. These deductions are founded on clinical observation and numerous experiments on dogs.

² Of these one of the most extraordinary is that of a man who lived thirteen years with a funnel-like depression of the vertex, which extended inwards to the depth of eighteen lines from the surface of the scalp, without there having been any symptoms whatever. (Hennen, *Principles of Military Surgery*, 3d ed., Case XXXIX.)

³ Only five of these cases occurred in my own practice. The remainder are taken indiscriminately, not selected, from the records of the campaigns in the United States, Italy, the Crimea, Schleswig-Holstein, Bohemia, the siege of Antwerp, and the writings of Paré, Baudens, Larrey, Freidburg, Stromeyer, Beck, Schwartz, Demme, Schmucker, Guthrie, S. Cooper, Hennen, Dease, and others.

the forceps, were instituted for marked symptoms of compression. Of these 45, or 50 per cent., died. Of 134 instances, on the other hand, in which the treatment was purely conservative and antiphlogistic, and in 43 of which the signs of compression were very doubtful, 61 recovered, and 73, or 54.47 per cent., died; or if the doubtful cases, which resulted in 10 deaths, be excluded, 91 cases of compression from depressed fractures, treated expectantly, afford 63 deaths, or a mortality of 69.23 per cent., a result in favour of operation by 19 per cent.

These statistics show, that, when symptoms result from depressed bone, the chances of saving life are on the side of surgical interference. The trephine was applied in 49 of the above 90 operations, with 26 deaths, the mortality being 53.06 per cent.; fragments of the shattered bone were removed by the forceps in 28 instances, with a fatality of 14, or 50 per cent.; the elevator was resorted to in 10, of which 3, or 30 per cent., were mortal; while in 3 instances Hey's saw was followed by death in 2, or 66.66 per cent. An examination of these facts does not disclose that the operation of trephining is more dangerous than other operative procedures. More patients recover after than without surgical interference, and many lives might have been saved by a timely resort to it.

In deciding the question of operation in cases of depressed fracture, it appears to me that primary symptoms of compression are of less importance than the existence of intruding fragments of bone, which must, sooner or later, be they fixed or movable, act as sources of irritation, and induce secondary phenomena due to inflammation of the brain or its membranes. It is true that immediate symptoms sometimes attend simple fractures with depression, the latter condition being frequently associated with a local clot, and, unless I greatly mistake, the rule of trephining, the symptoms being conspicuous, should be absolute under these circumstances. It is equally certain that instantaneous compression may be marked without there being any appreciable evidence of fracture. If the history be clear that there was no interval of consciousness, but that the symptoms were decided from the very outset, fracture with displacement of the internal table may be inferred, as in the case of Beck, quoted above.¹ Opening the skull is warranted for this condition. In fractures with depression and comminution, be they simple or compound, in punctured fractures, and, in fact, in all injuries in which the internal table is displaced to a greater extent than the external, the great danger is suppuration of the contents of the skull from the irritation provoked by pointed fragments of bone resting on the dura mater, perforating or lacerating that membrane, or penetrating the brain. Hence I hold that, in all these cases, it is far wiser to remove sources of irritation at once, thereby preventing inflam-

¹ For further information on this subject, the paper on Fracture of the Internal Table of the Skull, by Mr. W. F. Teevan, *Brit. and For. Med.-Chir. Rev.*, vol. 36, p. 189, may be consulted.

mation, than to temporize or wait for incipient meningitis or phrenitis as an indication of their presence, since the successful issue after surgical interference is greatly compromised when inflammation is once lighted up. Finally, trephining is demanded when secondary symptoms—those laid down as indications of pachymeningitis—arise after a gunshot blow on the head, without evidence of injury of the bones, the assumption being fracture with depression of the internal table alone.

4. COMPRESSION FROM FOREIGN BODIES.—A penetrating body, as a ball, which lies on the dura mater or the brain, or lodges in the latter, does not provoke immediate symptoms, unless it be very bulky, and it is even then generally associated with some other compressing agent.

Thus, a Russian soldier was struck at Witepsk, in 1812, by an iron shot of seven ounces weight, which perforated the frontal bone, lacerated the dura mater, and rested on the upper surface of the right frontal lobe, leaving an opening in the bone of only three or four lines in diameter. The orifice was enlarged by three applications of the trephine, when, by means of the elevator and forceps, the missile, along with a large clot of blood, was extracted. The symptoms were relieved at once; the pia mater was ecchymosed, and the brain presented a depression of about four lines in depth. The man recovered. (Larrey, *Mémoires de Chirurgie Militaire*, t. iv. p. 183, 1817.)

When the signs of compression are instantaneous, the injury is usually associated with considerable depression of bone; when they are intermediate, they generally depend upon extravasation of blood on the dura mater; and when they are remote, they are due to inflammation terminating in suppuration. The last group constitutes by far the most common of all the compressing agents, and it shows that, as in the case of spicules of bone, it is absurd to ascribe the consecutive brain troubles to the intruder alone. Balls are sources of irritation, and not of primary compression, although they may remain in the cerebrum for years, without causing mischief,¹ until, through some indiscretion, as a drinking bout, their presence is resented, and death suddenly takes place from apoplexy, an affection to which foreign substances seem to predispose. Such, briefly, is the history of most of these cases, when they do not terminate in abscess.

However paradoxical it may appear, experience proves that a ball, or a section of a ball, which lies in contact with, or lacerates, the dura mater, is borne with impunity less often than when it has lodged in the white substance of the brain. If permitted to remain, that membrane is constantly rubbed by the foreign substance, through the movements imparted

¹ The *Mémoire sur les Plaies du Cerveau*, by Quesnay, published in the *Mémoires de l'Acad. Roy. de Chir.*, t. i. and the *Literatura Medica Digesta* of Ploucquet, Tubingen, 1809, contain large collections of cases in which foreign bodies were encysted in the brain. The writings of Schmucker, Bilguier, Heister, Bruns, Beck, Chelius, Thomassin, Percy, Baudens, Larrey, Serrier, Hennen, Guthrie, and T. H. Andrews, of this city, may also be consulted by those who are curious on this subject.

to it by the motions of the brain, and it will, sooner or later, excite suppurative meningitis or cerebral abscess. These sources of the symptoms of compression occur usually within the first four weeks, but they may be delayed for months. Thus—

A private of the 3d Regt. Ky. Cavalry, in an affair with Forrest's forces, January, 1862, was struck by a conoidal pistol ball, which fractured the right parietal bone, close to its superior posterior angle, and to the right of the middle line. There were no primary symptoms, and the man was able to return with his retreating comrades to Calhoun, Ky., a distance of about ten miles, where I saw him ten days after the infliction of the wound. The gravity of the lesion had not been appreciated; but, from all the information that I could elicit, I judged that symptoms of compression had set in on the seventh day. There was a small, suppurating fungous protrusion of cerebral substance from the wound; the man was profoundly comatose, and died within a few hours. One-half of the projectile, imbedded in pus, lay under the skull at a little distance from the fracture; the dura mater was much lacerated and pressed upon by depressed spicules, the meshes of the pia mater were infiltrated with purulent fluid; and a large abscess of the right middle lobe of the brain communicated with the fungous mass.

When the dura mater is not injured, the symptoms set in later. A striking example of this occurrence, during our late war, is afforded by the following abstract:—

Corporal S., 12th Mass. Vols., aged 39, received at the battle of Fredericksburg, Dec. 12th, 1862, a slight wound of the right lower lid; the corresponding eye was destroyed, while the left eye was unnaturally prominent, but its functions were normal. After three weeks, the man was walking about, and complained merely of occasional pain over the left orbit, appearing to be perfectly well until Feb. 6th, 1863, when he had a chill, but no marked cerebral disturbance was evident until the 10th inst., when nocturnal delirium supervened. On the ensuing day he became comatose, and died Feb. 15. On dissection, a conoidal musket ball, incrustated with callus, which had entered through the walls of the right orbit, was found wedged between the sphenoid and left orbital plate of the frontal bone, and resting in contact with the dura mater. Over the ball, at the base of the left anterior cerebral lobe, was an abscess containing two drachms of pus. (*Circular No. 6, S. G. O., p. 15.*)

A still more remarkable example of the remote period at which symptoms may be lighted up by the presence of a small body on the dura mater is narrated by Morand:—

A soldier was struck at the battle of Parma, in 1734, by a spherical musket ball, which inflicted an apparently insignificant injury in the left temporal region, the symptoms of concussion having been mild. The wound remained fistulous: denuded bone could be detected with the probe; but the presence of a missile was not suspected. The man was troubled with intermittent headache, and expired suddenly in convulsions, at the expiration of nine months. The ball had penetrated the squamous portion of the temporal bone, being almost entirely within the skull, and pressed upon the dura mater, which was in a state of incipient gangrene. The left hemisphere of the brain was converted into an enormous abscess. (*Op. cit., Première Partie, p. 159.*)

The treatment of cerebral compression from foreign bodies, whether the symptoms be immediate, intermediate, or remote, is obvious. In any case, the indication is to remove the intruder, whether the object be to

relieve existing symptoms or prevent consecutive inflammation. When a ball is seated on the dura mater its detection is usually easy ; but it should be remembered that projectiles, or sections of projectiles, even if they be conoidal, as proved by several cases that have occurred in recent wars, sometimes glide between the dura mater and skull, and lie at some distance from the point of penetration. Under these circumstances, the practice of Larrey should be followed. Thus—

A spherical ball entered at the middle of the frontal bone, passed beneath the cranium, and was arrested at the lambdoidal suture. Its presence having awakened secondary signs of compression, Larrey introduced an elastic bougie, and carried it backwards until he came in contact with the missile, when, after making a corresponding measurement externally, he applied the crown of a large trephine, extracted the ball, and evacuated some pus mixed with blood. The man recovered.

In a second case, an elastic sound, passed into the orifice in the left parietal bone, came in contact with the foreign substance near the occipital suture, at which point the skull was also fractured, as indicated by ecchymosis of the scalp. As the symptoms of compression were increasing, trephining enabled Larrey to remove the half of a ball, which was flattened and partly imbedded in the bone, along with a considerable quantity of black blood. For a fortnight the man did well, but he was carried off by an intercurrent fever. (*Clinique des Campagnes*, t. i., pp. 215–216, and *Mém. de Chir. Mil.*, t. ii., p. 139.)

When a ball is presumed to have entered the brain, if a single introduction of the finger, or a female catheter, which should be permitted to sink towards the object by its own weight, rather than pushed forcibly onwards, fail to detect it, the man should be let alone, since it is better to temporize than to probe about in an injured brain. Numerous cases are on record, which demonstrate that the medullary, not the cineritious, substance of the cerebrum accommodates itself to the presence of a foreign substance, or makes efforts to throw it off when suppuration has set in. If the projectile be detected, all reasonable efforts should be made at its extraction, trephining of the opening in the skull being resorted to if it be too small to admit of its easy removal. The wisdom of this practice is confirmed by the recent case of Watson, quoted under the treatment of abscess of the brain, and by that of Howard, of New York (*Amer. Journ. Med. Sci.*, Oct. 1871, p. 385), in the latter of which, a misshapen conoidal ball, buried in the cerebrum, was successfully removed, along with some blackened and diffuent brain tissue, two weeks after a gunshot wound of the frontal bone, the aperture in the bone being one-thirtieth smaller than the size of the bullet. In this case the diagnosis was based upon symptoms of compression and a single hair wedged in one of the fissures. The presence of one or more hairs in the fracture is an important diagnostic aid, as they could scarcely have intruded without being introduced into the line of separation by a penetrating missile. A tuft of hair wedged in a minute fissure, and symptoms of suppurative pachymeningitis, led Dr. Watson, in the case quoted previously, to suspect pus and a fragment of a ball on the dura mater.

In some cases the missile perforates the brain, but not the skull.

Under these circumstances, if it can be traced, an attempt should be made to remove it. Thus, Guthrie (*op. cit.*, p. 371) states that a man was brought to him at Talavera, in an insensible state. He followed the ball for nearly four inches with a probe, carried in close contact with the inner surface of the vault of the cranium. An incision opposite this point revealed a fracture, which was excised by the trephine, and the ball, which had nearly effected perforation, was removed. Death, however, ensued in forty-eight hours.

PHILADELPHIA, December, 1872.

ART. III.—*Epidemic Cholera in South America.* By ENRIQUE M. ESTRAZULAS, M.D., late Resident of the Cholera Hospital at Montevideo, Uruguay; Resident Physician to the Children's Hospital, Philadelphia.¹

It is generally held that cholera can never be produced *de novo* and has never been so produced; still, we think that an examination of the following facts in relation to its occurrence in Paraguay will be interesting as tending to the establishment of proper views on the subject. The epidemics in Paraguay thus far have been unnoticed by medical writers, and we feel it proper, therefore, to present the facts as they occurred, although the conclusions drawn from them may be opposed to the doctrines held at present.

For the better understanding of the progress of the successive epidemics of cholera in South America, and of some of the causes of its generation, it is necessary to give a short account of the topography of the country.

The region of La Plata or the River Plate where the epidemics of cholera occurred in 1866, '67 and '68, is situated in the middle and southern portion of the continent of South America, and comprises the Uruguayan and Argentine Republics, which are the territories on its banks, and also nominally the Paraguayan Republic, where the Paraguay and Paraná Rivers rise to form by their confluence further south, the great stream of La Plata.

These countries are comprised between the parallels 24° and 34° S. Lat., and meridians 50° and 60° W. from Greenwich. Within the range of ten parallels there exists in this region a diversity of climates, from the tropical—at the confluence of Paraguay and Paraná Rivers—to the mild and temperate at their termination in the La Plata. Thus in the former the average temperature is from 40° to 60° F. in winter, and from 70° to 100°

¹ An Inaugural Essay for the degree of M.D. in the University of Pennsylvania, to which the Alumni prize was awarded at the Commencement held March 13, 1873.

in summer, while at the latter the average is 50° to 80° in summer and 40° to 0° in winter.

The La Plata proper is formed, first, by the Paraná River (1300 miles long) which in itself is a continuation of the Paraguay; and, second, by the Uruguay (400 miles long) formed by the Rio Negro and other smaller affluents.

The confluence of these rivers forms the great estuary of La Plata, 140 miles wide, having on its left bank the Uruguayan Republic, and on its right the Argentine, with their respective and rival capitals, Montevideo and Buenos Ayres, the two great depôts of an immense European trade.

The city of Montevideo and the remaining coast of Uruguay are bounded by the Atlantic Ocean, while its opposite city, Buenos Ayres, is surrounded by the fresh water of the La Plata. These two cities are the great and only harbours of the southern part of the continent, and consequently have a constant and open communication with European ports, and are visited by over 10,000 vessels during the course of the year, not only for direct trade, but they also serve as intermediate stations for the whole domestic and foreign trade of the countries bordering the Paraná, Paraguay, and Uruguay Rivers. So, there are two great lines or routes of travel, one direct of imports and exports from European ports to Montevideo and Buenos Ayres, and another secondary one from these two cities up to all the ports along the banks of Paraná, Paraguay, and Uruguay Rivers. All vessels coming from abroad discharge their merchandise and passengers at either Montevideo or Buenos Ayres, to be reshipped in other vessels suitable for river navigation.

Paraguay is bounded on the east by Brazil, and on the north, south, and west, by Brazil and the Argentine Confederation and Uruguay, so that it is surrounded and isolated by the latter countries, with which it became involved in war.

It was not until 1866 that cholera became known to the countries of the La Plata; and, prior to the appearance of the epidemic in Paraguay, not a single vessel from infected ports had arrived either at Montevideo or Buenos Ayres, and not a single case occurred at either city before it had been imported from Paraguay.

In 1866 the allied armies of Uruguay, Brazil, and the Argentine Republic were brought, by the war against Paraguay, up to the confluence of the Paraguay and Paraná Rivers, and thus the necessary strategic operations greatly increased the river travel between Montevideo and Buenos Ayres, on the one hand, and the seat of war on the other, where a neighbouring city (Corrientes, in the Argentine territory) was made a military depot for the allied armies.

Above Corrientes the allied squadron kept a constant and unbroken blockade, which, conjoined with the fortifications and obstructions in the

Paraguay River, served to keep the Paraguayan troops totally isolated from the rest of the world.

The vessels carrying troops from Brazil to the seat of war first visited Montevideo, and were afterwards carried up the Paraná River, thus making a direct communication with Corrientes and serving to keep one line open with the seat of war, for troops, merchandise, and passengers, and another for the return of sick, wounded, and traders.

The voyage from Montevideo lasted from seven to nine days by steamers, and from fifteen to twenty by sailing vessels.

With the first outbreak of cholera the allied armies were encamped at Estero Bellaco, on the banks of Paraguay River at its confluence with Paraná, and remained in their positions for over a year, their invading march being checked by the entrenchments of the Paraguayan army, and by the formidable fortifications and obstructions at Curupayti and Humanitá in the river.

The allied armies numbered from 80,000 to 100,000 men, with half of that number of a floating population of merchants, peddlers, women, and jugglers. The Paraguayan army at their entrenchments varied in number from 40,000 to 60,000 men, and almost an equal number of women.

The invading army controlled only the territory they then occupied, and their advance was gradual, inch by inch, as it were, against a desperate and heroic defence of their native soil by the Paraguayans.

Estero Bellaco, where the allied armies were forced to remain for over a year, was a small extent of swampy land, bounded by the Paraguay River on one side and by impenetrable forests on the other. The banks of the river were flooded in early summer, and this freshet was followed by prolonged droughts and intense heat. Vegetable decomposition rapidly took place in the *débris* of a rich, tropical flora. Daily fighting and constant assaults created a new source of disease in the thousands of bodies of men and animals left in camp or thrown into the swamps or river, as the activity of war operations and the vigilance of camps in sight of the enemy afforded no time for burials and scarcely any for partial incinerations. Hygienic laws were totally neglected, and malaria, dysentery, and typhus were the natural results. The Brazilian army, the most numerous, was entirely composed of liberated slaves who lived with a total disregard of cleanliness, and whose diet consisted principally of jerked beef, and they suffered more and there was a greater mortality in their ranks by disease than by battle. It was among these troops that the first cases of cholera occurred in the allied camp. In the early summer of 1866 in Paraguay, the usual rains were characterized by their persistence and by alternations with the severe thunder storms of the tropics. The inundation of the camps followed, thus rendering war operations by either army impossible for a while.

When summer came and the waters subsided, the army was found

occupying a limited space of ground, overcrowded and subjected to chilly, foggy, and damp nights, followed by intensely hot days and exposed to the infection of miasmata and the effluvia from putrid emanations that were exhaled from the thousand foci that surrounded it.

The prevailing camp diseases took then a malignant and epidemic type, the mortality was fearful, and to the discouragement of successive defeats was added the impossibility of removing the camp, as a single step in this direction would have endangered the whole success of the campaign.

So, when the first cases of cholera appeared among the Brazilian troops, the whole army was obliged to remain unmoved and powerless against this new foe, which made more havoc among its ranks than the Paraguayan bullets.

The first epidemic at the allied camp occurred very shortly after cholera had appeared among the Paraguayan troops, with whom the allied came in contact only in battle, and among whom, according to the prisoners' statements, the disease was raging terribly.

The Paraguayans entrenched opposite were exactly in the same conditions of hygiene and subjected to the same influences as the allies, but perhaps having the advantage of acclimation and of a morale elated by successful resistance. As for communication with the rest of the world, it was totally impossible, as their only outlet, the Paraguay River, was strictly and incessantly blockaded. The allied, as well as the Paraguayans, fell by thousands, thus adding new sources of decomposition to the almost putrid air they had been breathing for months.

It was after the usual summer floods had subsided that the first cases of cholera appeared among the Paraguayans, and shortly afterwards among the Brazilian troops, and in a few days every regiment in camp and every vessel on the river had caught the infection. This first epidemic was of a most fatal and virulent type, the mortality being 70 per cent.

The vessels carried the disease next to Corrientes, which was then swarming with people. This city was ravaged, and from there cholera was conveyed to the neighbouring towns and villages, more especially to those on the banks of the river. The active trade between Corrientes, the intermediate ports, and the cities of Montevideo and Buenos Ayres, rendered these places liable to an inroad of the epidemic, but rigid quarantines, hygienic measures, and, above all, the approach of winter (which is severe at the mouth of La Plata) saved them from the dreaded visitor which was then in Paraguay, over 1000 miles off. The disease disappeared in the autumn of 1867 at Corrientes and the other places infected, but remained more or less active at the camp.

During the following summer the disease again assumed the epidemic form in the army, and again attacked Corrientes and all the places visited by it the previous summer. This time, however, it extended its march downward and invaded in succession La Paz, Bella Vista, Paraná, and

Rosario, till, in December, it reached at last the city of Buenos Ayres, the population of which was diminished 30,000 souls out of 150,000. On the appearance of cholera in Buenos Ayres, the opposite city, Montevideo, closed her port, and so did in turn all the cities up the Uruguay River, and for that summer, at least, escaped.

Cholera lasted in Buenos Ayres three months, extended itself to the suburban towns, and was marked by the usual fluctuations of temporary abatement and recrudescence, until at last a positive decline took place in March (autumn in La Plata), which ended with its total disappearance in the winter. This season is milder up the rivers in proportion to the distance of the towns from the mouth of La Plata, and so in an extent of over 1300 miles the disappearance of the epidemic was gradual and following an inverse march to that of its invasion. This second winter the disease left Corrientes also, but numerous cases continued to prevail sporadically in the allied camp.

The third epidemic in the summer of 1868 was marked by the same occurrences as in the previous ones—from the camp to Corrientes, from Corrientes down to La Paz, Bella Vista, etc., and finally Buenos Ayres again.

This summer, and with this third epidemic, it was Montevideo's fate to pay her tribute to the disease, and in spite of all precautions cholera was imported directly from Buenos Ayres, and in the months of January, February, and part of March, 3000 deaths occurred in a population of 120,000 souls, the comparatively small mortality being due to its superiority in soil and hygiene over its rival city, Buenos Ayres.

Montevideo being infected, the cities along the Uruguay River, then in communication with her, were in turn attacked, the disease being carried to them by steamers leaving the latter city.

The epidemic in Montevideo and Buenos Ayres disappeared again with the winter, and gradually along the rivers, following the same route as the year before.

At this time the war operations were brought to a close; the batteries at Curupaity and Humaita were forced and taken; the entrenched camp at Estero Bellaco was carried; and, while some of the troops occupied Asuncion, the Paraguayan capital, the remaining forces were scattered in light divisions to pursue the retreating enemy, who was then trying to make a last stand in the mountains of the interior. The camps were then abandoned and the troops removed to healthier territories. Their morale had become exalted by victory and the hopeful termination of a war of four years. The bulk of the army was then quartered in the capital and towns, and had better lodgings, better clothes, and better food, and no longer was subjected to overcrowding and malaria, all which causes seem to have had a decided influence in putting an end to the epidemic. The disease did not again appear in Paraguay, the focus being

obliterated. Paraguay, the rivers, and the cities at La Plata have been to this time exempt from the disease, yet at the latter part of 1868 some of the interior provinces of the Argentine Republic suffered, and from these, following the land routes of travel, it was carried to the countries along the Pacific coast, invading Bolivia and Peru and following an upward march towards the tropical countries of that side. We are unable to trace its progress further.

In regard to the character of the disease itself, we will refer to an extract from a communication from Dr. Blancas, of Buenos Ayres, to the author, and next to personal observation at the hospitals in Montevideo.

In Buenos Ayres, previous to the first invasion, the medical constitution was characterized by gastro-intestinal derangements. *The disease was directly imported from Paraguay*, however, for the first cases occurred late in summer. The invasion was rapid, two hundred deaths occurred daily; the deficiency of ozone was marked.

The second epidemic appeared in November (beginning of summer), lasted three months, made twenty thousand victims, and disappeared with the winter.

Symptoms of Typical Cases.—Copious and constant vomiting and purging of rice-coloured discharges, severe cramps, thirst, cold skin, prostration, loss of voice, emaciation, alteration of features, collapse, and death after from a few hours to one or two days; periods and type of reaction variable. Results of post-mortem examination identical with those observed elsewhere.

In Montevideo, during November and December, the medical constitution was characterized by gastro-intestinal derangements (cholera muqueux, cholera séreux—Jaccoud).

On the 29th of December, four or five cases of a suspicious nature were admitted to the hospital of "La Caridad," presenting the following symptoms: Violent purging and vomiting; bilious at first, and light, turbid, inodorous, flocculent, and rice-coloured afterwards; violent cramps, especially in the calves of the legs and abdominal muscles; great and insatiable thirst; oppression; cold, clammy skin; eyes sunken; features rapidly altered; emaciation; loss of voice; cyanotic hue of extremities and face; abdomen when relaxed retracted over the spine; breath cool; pulse and heart feeble; skin when pinched retaining the folds caused by the fingers; mind clear but apathetic; great prostration, and death by slow apnoea in a few hours.

After death the cadaver was warmer than the surrounding atmosphere; muscles of limbs and face twitched, and in some instances limbs were automatically raised from the bed; cadaveric rigidity was very marked.

Brain and membranes pale as a general rule; general dryness of the surfaces; right heart and venous system full of dark, thick blood and small clots; arterial system empty; lungs normal. Alimentary canal

containing in some cases a liquid similar to that ejected during life; no ulceration; no lesion noticeable in the intestines; mesenteric vessels stained with colouring matter; liver and spleen normal; bladder retracted and empty.

The cases admitted to the Charity Hospital died in a few hours, and on the 31st of December new cases appeared among the patients in the medical wards, and with new arrivals the whole number amounted to eighteen on that day.

All presenting these symptoms, and the rapid increase in the cases, left no doubt as to an invasion of cholera, and in consequence on the 1st of January the first cholera hospital was opened.

To this hospital were transferred all the cases that occurred at the Charity Hospital, and hourly arrivals took place from all parts of the city. In five or six days the number of cases increased so much that three additional hospitals were opened in the city and suburbs. The cases coming under my observation were all of recent occurrence, for as soon as discovered by the city authorities they were removed to the hospitals. Of these some died on their way to the hospital, others shortly after their admission.

The cases presented the same symptoms as those previously observed, and in the first weeks of January they were marked by the suddenness of the attack, the severe and rapid development of symptoms, collapse and death. At this period, reaction from the algid stage seldom took place, and when it did, the intensity of the cerebral symptoms carried the patients off. The average admissions were fifteen daily. At the latter part of January the type seemed milder and in all cases without exception, there was a history of premonitory diarrhœa, malaise, etc., for twenty-four or forty-eight hours. The stages also were more widely apart, and reaction even from the algid period often took place, though as a general rule this reaction took either the ataxic or adynamic type of the typhoid state, which prolonged the disease but also comparatively diminished the fatal results.

Frequent oscillations in the diminution or increase of cases were marked in the city, and not less so in the hospitals.

In the middle of February troops and armed citizens were called into service on account of political disturbances, and this movement not only increased the number of new cases, but gave to them the fulminant type of the early days of the epidemic.

After this time the cases began to decline gradually, and early in March the disease had totally disappeared, and the hospitals were closed.

Having enumerated these facts, we will endeavour now to point out some of the causes which existed in Paraguay, and which may have had an influence in the production of the epidemic.

Paraguay is a decidedly malarial region, and though the exhalations of low grounds in alluvial soils may and do exert different influences, yet the

tertiary or alluvial soils are not essential to the production of cholera, just as the same soils are not apt to suffer in preference while the older formations escape. The view that cholera is more apt to occur in soils of identical geological formations, is contradicted by numerous facts, and none more striking than that offered by the city of Paris, which, from the nature of its soil, should have been spared from a visitation of the disease, and yet few cities in Europe have suffered more from it, and few have furnished a larger number of victims.

The only soil influence admissible here is its porous nature, as the danger arises from the permeability of subsoils to liquids and gases. In Paraguay the soil is sandy, and consequently porous, and as a result we notice that after the appearance of cholera the disease remained endemic for three years, and not until the camps were broken up and the armies dispersed did it completely disappear. We cannot say whether the specific poison of cholera once generated was absorbed and toxically impregnated the subsoil so that its action became permanent upon the armies encamped thereon; or whether the combination of other causes existing no longer, no new generation took place; or whether its action ceased to be felt from want of pabulum or subjects for its action, as these ceased to exist in consequence of the removal of the armies. But it is a fact, that after the contending armies had abandoned Estero Bellaco and acted separately and scattered in the interior and high grounds of the country, the disease totally disappeared from its original seat, partly exemplifying the assertion that, "*Les maladies contagieuses ont la propriété de se déplacer avec les masses, qui se comportent alors comme des foyers mobiles.*"

But independent of soil influence, either as to generation or propagation of cholera, there existed other causes in Paraguay which are to our mind of more importance, and which offer a striking analogy to similar conditions in India.

The location of Estero Bellaco was, as already stated, decidedly malarial; the army not only had the river as a boundary and the land subject to periodical inundations, but it was also surrounded by pools and marshes. The country, having the same latitude as the Cashmere valley, is like it subject to all the atmospherical phenomena of a tropical land. The seasons at Paraguay are only two, summer and winter, dry and rainy. The winter is noted for heavy rains. The ground is soaked and the river overflows, and, when the subsidence of the waters takes place, the season is marked by chilly, foggy, and damp evenings; while thick vapours in the morning, which only disappear late in the day, under the influence of the sun's rays, give place to several hours of intense heat, which subjects land, plants, and animals to a species of coction, a faint idea of which can be had in the *dog days* of northern cities. This state of things lasts for a variable length of time, and thus for a considerable period the

armies were exposed to the noxious influence of alternations of heat and cold, combined with a very humid atmosphere.

When the warm season has become established the water in the pools and marshes is evaporated, and then vegetable decomposition begins with its inevitable result, malaria.

Some Indian authorities maintain that malaria is, in itself, one of the precursors of cholera; and though its positive or specific influence is denied by many, it is nevertheless recognized by some as one of the factors in its production.

If we are to accept the decomposition of vegetable matter in India's indigenous flora as one of the causes of cholera, we have to admit that analogous decomposition could be alike in its results, for the floræ of the Himalayas and the Cashmere valley are of an analogous type to that of Paraguay; and the results of decomposition must be also similar. The same may be said as to the soil changes.

But it has never been shown what there is specific in the soil of India which gives rise to cholera, and it can scarcely be admitted that, independently of other causes, the source of cholera is a peculiar, *unique* condition of soil there, for its analogue is to be found in other parts of the world.

Malaria and other zymotic diseases are generated anew whenever proper conditions for their development occur. Now, in cholera, the combination of causes, we conceive, are soil changes, vegetable and animal decomposition, atmospheric influences, overcrowding, filthiness, etc. etc. Why then should not the same combination of causes give rise to cholera in any other part of the world where they exist?

In Paraguay before these causes were present, cholera was not known; when these causes occurred, cholera appeared; and when these same causes ceased, the result was the total disappearance of the disease. These facts are undeniable and incontestable, but we must leave the delicate ground of speculation and proceed in our description.

To the putrid exhalations arising from animal decomposition (for the allies as well as the Paraguayans neglected to bury their dead, but threw most of them into the river, contaminating the waters used by the armies) are to be added purely miasmatic ones due to overcrowding; for it is well to state here that the contending armies occupied the same grounds, lived alike, and were exposed to the same influences; for within an area of a few miles extent two great armies were stationed, numbering conjointly 300,000 persons, with only the Paraguayan entrenchments as the dividing line between them.

The allies, however, were placed in a decidedly worse condition, for they were not only strangers and unacclimated, but also under an atmospheric constitution, which if in itself powerful in modifying the functions of the economy, was no less so in bringing about a general and morbid pre-

disposition. The soldiers were badly lodged, and badly fed, owing to a deficient and almost criminal management of supplies. Lax discipline brought licentiousness and debauch into camp, which were alternated by the moral depression of homesickness and the discouragement of defeat. Added to these, we had the overcrowding and filthiness, and all these causes conjointly seemed to have been most favourable for the action of miasmatic, effluvial, and putrid influences.

The medical constitution of the troops was greatly modified and aggravated by all these influences, which acted almost permanently, inasmuch as for over a year the allied armies, at Estero Bellaco, could not move in any direction; they could not advance, the enemy being too strong, nor retreat for fear of a disastrous attack.

Thus far the causes discussed can be fairly included under the head of vitiation of the atmosphere; it remains for us to consider electrical, hygrometric, and ozonic influences, the winds and barometric pressure.

In regard to electricity, abundant sources for its development existed, but the influence of electrical states is not clearly understood, and opinions on the subject are so contradictory, and the result of experiments so variable, that its value becomes negative.

Nevertheless, electrical changes were manifest, and, whether explicable or not, they are of great value, as are also variations in the ozometric state of the air. The action of these is neither understood nor defined; yet the deficiency of ozone in Paraguay was marked, and similar to that observed elsewhere.

The humidity of the air at Estero Bellaco was very great though varying with the seasons. Like other tropical countries, with luxuriant vegetation its high hygrometric state was brought on by the same causes, and increased by the incessant rains of the winter. Humidity acts powerfully in cholera, especially by adding to the impregnation of the soil.

In regard to winds, the only one we can refer to is that of the *pampero* or southwestern of La Plata, which rises at the *pampas* and sweeps across all these countries, traversing thousands of miles and coming over the countries west of La Plata as a heavy, oppressive, and dusty visitor, which, after crossing the wide mouth of this river, runs over its eastern shore to the Atlantic, its action being now peculiarly healthy and invigorating, and exerting a beneficial influence over the medical constitution of Uruguay and southern parts of Brazil.

In regard to its constancy and alternations we lack information, not being able to obtain the observations of the medical officers in the armies, and for the same reason we cannot furnish the relative barometric pressure.

We think we have, however, presented the most important facts in connection with these epidemics, and from them we may draw the following conclusions:—

1st. Cholera was unknown in Paraguay and La Plata previous to 1866.

2d. Before the armies were stationed at Estero Bellaco, no case had occurred, and after the removal of the troops the disease totally disappeared.

3d. No vessels from infected ports arrived at La Plata or Paraguay previous to 1866.

4th. If cholera had been imported from abroad, the cities at La Plata ought to have been the first attacked.

5th. Troops coming from Brazil could not have brought the disease with them, as it did not exist at any Brazilian port or city at the time.

6th. Cholera appeared first in Paraguay, and following the course of the rivers infected in its downward march all the cities at its banks.

7th. The disappearance of the successive epidemics followed an inverse route to that of its invasion.

8th. The Paraguayan army, where the disease first appeared, was secluded from the rest of the world and completely blockaded by land and water.

9th. The disease remained endemic for three years in Paraguay.

10th. The combination of causes at Estero Bellaco resembled those presented in India.

11th. The combination of causes in India has never been reproduced, except in Paraguay.

ART. IV.—*On the Prognosis of Syphilis.* By F. R. STURGIS, M.D.,
Assistant Surgeon of the Manhattan Eye and Ear Hospital, New York.

PERHAPS the most common every-day question asked of the surgeon is whether syphilis is curable, and it behooves him to answer this with some degree of certainty and accuracy. Within the past few years our knowledge of the course and duration of syphilis has undergone many important modifications, and the disease which formerly was the *bête noir* of the profession is to-day deprived of half its danger from a more accurate knowledge of its action and effects. Fully appreciating the ravages syphilis may produce, and the frightful consequences which may ensue, I do not hesitate to affirm my belief that a very large proportion of cases entirely recover and that, too, without disfiguration or loss of important organs. Like all other diseases, syphilis tends to self-limitation, somewhat dependent, it is true, upon external circumstances, such as age, constitution, and hygienic surroundings; moreover, if we accept as a fact, which I think we must, its division into the two classes of benign and malignant, and when we see how much the former preponderates over the latter, entire recovery from this disease need no longer be a matter of surprise. Were it not so, how few

of the living would have been born healthy, and when we notice the small proportion of syphilitic births to the number of cases of syphilis in any large city, even in the families of those whom we know to have suffered from the disease, it seems to me still further to corroborate my statement. I confess, however, that this is open to criticism as a mere opinion, and is difficult of statistical proof.

Let us suppose a case of syphilis presenting only the primary lesion; are we enabled to foretell with any degree of certainty what the result will be? in other words, will the primary or subsequent lesions give us any clue as to what we may expect in the future? I think they will, and although *not absolute*, still they often furnish us important and trustworthy data upon which to base an opinion.

We know, in the first place, that the initial lesion is not the end of the disease; subsequent symptoms *must inevitably* make their appearance, the question then arises: Are these symptoms going to be mild or severe? Bassereau in his work¹ furnishes cases bearing upon the kinds of chancre which were followed by mild and by severe subsequent symptoms, and he found that where the initial lesion was phagedenic or showed a tendency to ulcerate, the subsequent symptoms were also of a severe and ulcerative type.

Thus: In 52 cases of tubercular syphilis, the initial lesion was—

Phagedenic in	18
Ulcerative in	22
Superficial in	10

In 68 cases of pustular syphilis the initial lesion was—

Phagedenic in	24
Ulcerative in	41
Superficial in	3

In 77 cases of mucous patches the initial lesion was—

Superficial in	59
Ulcerative in	15
Phagedenic in	5

In 28 cases of papular syphilis the primary lesion was—

Superficial in	17
Phagedenic in	3
Ulcerative in	8

In 170 cases of erythema, the initial lesion was—

Superficial in	146
Ulcerative in	14
Phagedenic in	10

In nearly all the cases where the disease was of a severe type the induration of the ganglia was a marked and prominent symptom.

¹ Traité des Affections de la Peau symptomatiques de la Syphilis.

In looking over these cases we see that where the subsequent symptoms invaded the deeper tissues and were of destructive character the initial lesion was generally of the ulcerative or phagedenic type, while the superficial form of primary ulcer predominated where the subsequent symptoms were mild, and Bassereau has tabulated the result in the following words : "If the initial lesions are mild in character the subsequent symptoms are likewise mild, and show no tendency to suppurate ; if, however, the initial lesion be phagedenic the subsequent symptoms will be severe, ulcerative, and attended with suppurating exostoses, necrosis, and caries."

Thus far our patient has only reached the first stage of his disease, and although we have formed some slight opinion as to what may next occur, we must await the appearance of secondary symptoms to confirm it ; our prognosis, therefore, will be somewhat guided by the length of the period of incubation, and the character of the symptoms themselves. Should they appear before their usual time and show a tendency to display, in place of the ordinary roseola, mucous patches, and other symptoms pertaining to the early stage, a papular or pustular form, we are justified in expecting an early attack of such symptoms as usually occur at a later period, which will probably be of an ulcerative nature ; while, on the other hand, if the secondary symptoms are mild in character, and readily amenable to treatment, we may with tolerable safety predict a light attack of the disease. Another point of importance in forming our opinion besides the character of the lesions themselves, is the length of time which elapses between the appearance of each separate attack, inasmuch as the longer the period the more feeble the action of the poison, and the less the chances of subsequent trouble. When the disease shows a tendency at the outset to assume a severe type, one train of symptoms may make their *début* before the last have disappeared, so that upon the same person we can distinctly trace the different stages of the disease, constituting what Ricord called the polymorphism of syphilis. This was very well shown in a patient under my care some time since, in whom the primary lesion was particularly obstinate, deeply ulcerated and serpiginous. In him the roseola amounted to almost nothing, quickly giving place to a papular eruption ; this in turn rapidly became pustular, and these pustules by rupture were covered with small soft crusts, so that I could trace a roseola, papules, pustules, and ulcerations at the same time. These symptoms all came on in spite of an active treatment.

Before going any further let us bear in mind that the usual duration of an attack of syphilis is about a couple of years, that is to say, where the disease is of average severity, and in that interval of time our patient may not go beyond the earlier stages of secondary syphilis, the attacks being repetitions merely of one another, more especially if the lesions be seated in the throat. This is a favourable sign, for it shows that the poison is not active, and has a tendency to remain, to a certain extent, local in

character ; this condition of things is still more favourable if each successive attack be lighter than its predecessor.

But perhaps our patient is not so fortunate, and the symptoms, instead of remaining in *statu quo* or receding, show a progressive tendency ; must the prognosis be necessarily unfavourable ? By no means. We will say our patient has gone through various stages until he is attacked with a psoriasis, iritis, or some of the milder ulcerative forms such as ecthyma, how shall we be guided in our opinion for the future ? In three ways : by the history of his preceding symptoms, by the local appearance of the lesions themselves, and by his general condition. If, upon questioning him, we find that his previous symptoms have been light, short in duration, amenable to treatment, and if, as in all probability happens, we further find that his present symptoms, if ulcerated, have no tendency to spread rapidly, or have been rather slow in appearing, we need not despair, the chances are still good, and even in cases where the disease has attacked important tissues, such as the bones or joints, and where ulcerations, if present, are deep, and show a tendency to spread, although the prognosis must be more guarded, it need not be adverse. I have seen several such cases recover from this disease, and remain well when seen some years after.

Up to this point we have considered merely those lesions which are comparatively superficial in character, and which have not attacked the more important portions of the body. As the disease progresses from the more superficial to the deeper seated tissues, the prognosis undoubtedly becomes graver in a proportionate ratio. The various syphilitic affections of the liver, kidneys, lungs, arteries, muscles, and nerves are all of them important in their relations to the prognosis ; those of the liver usually being the least grave. The affections of the kidneys in their earliest stages are comparatively of little moment, the danger lying principally in the tendency to Bright's disease, and the corresponding cachexia. In the latter stages, the tubules of the kidney may be cast off in a fatty, degenerate condition, and the substance of the organ filled with a lardaceous or gummy deposit. Under these conditions the prognosis is unfavourable. The more usual affections of the lung are due to the deposit of gummy material in a diffuse or circumscribed form, and where, as sometimes occurs, this deposit begins to break down, the case may readily be mistaken for one of phthisis, unless we have the history to guide us. But by far the most important and usual lesions are those of the encephalon and spinal cord. Here our opinion as to the future rests in a great measure upon the length and duration of the attack ; in the earlier stages when the disease appears to be, so to speak, more functional than organic, the prognosis is as a rule favourable, but where it has lasted for some time, has been attended with an old deposit of gummy material or accompanied by paralysis, the prognosis is usually unfavourable. In such cases of syphilitic paralysis the

patient may, indeed oftentimes does, improve under treatment up to a certain point, but he never completely recovers, and is particularly prone to relapse, each succeeding attack of course rendering the prognosis less favourable. Probably the larger proportion of syphilitic nervous diseases do not go beyond the congestive stage; where this is the case, treatment will be of benefit, but in the more chronic conditions treatment seems to be of very little avail. Where nerve tissue is destroyed, or where softening takes place, the prognosis is almost always unfavourable, but even here we must bear in mind that no matter how desperate the case may seem, we need not entirely abandon hope, as such patients will sometimes improve very rapidly under treatment, although they may not entirely recover. In paralysis of special nerves, as of the third, fourth, and sixth pairs, the prognosis is nearly always bad; where the former is the seat of disease, the patient seldom recovers permanently from the attendant ptosis. The future of these cases depends very much, however, upon the duration of the attack. An interesting case of this kind occurred in the service of my friend Dr. Roosa, at the Manhattan Eye and Ear Hospital, where the ptosis, a recent one, was associated with facial paralysis, and insufficiency of the external rectus, all three being due to syphilis. Dr. Roosa kindly showed me the case and asked my opinion. I gave him but little encouragement; still I advised the mixed treatment.¹ After several weeks of treatment, the ptosis got entirely well, even before his facial paralysis and insufficiency. This latter was remedied by an operation. A month after the treatment he returned to the hospital with a ptosis of the other eye, not complicated with any insufficiency or facial paralysis. He is again improving, but it still requires a strong effort on his part to keep the lid up for any length of time. What the result will be, supposing him to have a third attack, is a permanent ptosis, and that he will have another one is, I think, extremely probable.

The same is true of paralysis of the muscles of the eyeballs, and the longer the duration of the disease the less the chances of recovery.

One of the most serious and fortunately one of the least common of the results of syphilis is that known as "syphilitic cachexia," where it would seem as though the system becoming entirely saturated by the poison had lost all functional and vital power; the patient sinks slowly inch by inch in spite of all that can be done, and finally succumbs to some intercurrent disease, the severity of which is entirely disproportionate to the result. As may readily be conceived, the prognosis is very unfavorable.

In an early part of this paper, it was stated that age, constitution, and hygiene were important factors in forming our prognosis, and I can add but a few words as to the part that age plays in the disease. Old persons and young children, particularly the latter, suffer more severely than do

¹ Iodide of potassium in combination with some mercurial.

adults, and I shall show further on how large a proportion of deaths from syphilis occur in those under one year of age. If the child be born syphilitic, or if the disease appear within the first month of its existence, the prognosis is very serious; the longer the time which elapses between the child's birth and the appearance of symptoms, the better the chances. These symptoms usually occur within three months after birth; never, so far as I know, later than a year, and their gravity consists not merely in the presence of the external symptoms, but upon the coexistence of some internal visceral lesion, more particularly of the liver or peritoneum, and the consequent exhaustion.

In such as are debilitated, either from some hereditary taint, dissipation, or any other cause, the prognosis must, of course, be more guarded; but even here it is wonderful to see how rapidly they will sometimes recover from the disease. A curious fact, and one which I have often noticed, is, that in negroes syphilis usually goes on from bad to worse, in spite of all that can be done; why, I cannot tell, but the symptoms in them progress much more rapidly, show greater tendency to ulceration, and heal comparatively slowly.

The hygienic conditions of the patient must also be taken into consideration; those who from any cause are ill-nourished, or who live in ill-ventilated, over-crowded apartments, are much less amenable to treatment than where the patient has plenty of good food, light and air; this is explicable upon the ground that syphilis is in itself an exhausting disease, causing, in the earlier stages at least, changes in the blood corpuscles themselves.

Thus far the prognosis of syphilis has been only considered as it affects adults, leaving that of hereditary syphilis for a separate consideration, and here is where we meet with the most unfavourable results; the larger proportion of deaths occurring in children under one year of age.

As showing how largely the number of deaths in infants preponderates in the sum total of deaths from syphilis (adults and infants together), I have collected the following statistics from the reports of the Boards of Health of New York and Philadelphia:—

Deaths in New York from Syphilis.

	Total No.	No. under five years.	No. under one year.
1866	44	24	20
1867	76	58	57
1868	77	71	69
1869	77	63	61
1870	106	91	89
1871	142	120	113

Deaths in Philadelphia from Syphilis.

	Total No.	No. under five years.	No. under one year.
1860	9	6	4
1861	9	4	4
1862	21	16	11
1863	28	20	15
1864	25	17	16
1865	30	10	8
1866	22	12	11
1867	25	15	15
1868	43	23	13
1869	21	13	10
1870	23	12	10
1871	19	12	10

From this it would seem that nearly 80 per centum of the deaths from syphilis in the city of New York occur in children under 5 years, and nearly 60 per centum in Philadelphia. *More than it ought to be; more than it need be.*

Of the total number of deaths in children under 5 years of age, how many succumb at or before their first year? The result is equally sad.

From these figures, therefore, in New York the mortality of infants under 1 year of age is about 96 per centum of the total number of deaths from syphilis in children under 5 years, and about 80 per centum in Philadelphia. In view of these statistics, is it not worth while to consider some means for the prevention of this cause of infantile mortality? Sanitary science has done much to diminish the mortality of many diseases which formerly counted among the dead their thousands and tens of thousands; why not here? It is not upon the culpable ones that the punishment falls most heavily, but upon the innocent.

In a previous portion of this paper, I stated my belief that the larger proportion of persons suffering from syphilis recovered from their disease; but as it is impossible to obtain any statistics regarding the number of cases of syphilis which occur in any city during one year, the proportion of recoveries to those of incurables or of death cannot be given, but some approximation may be made by comparing the *total* number of deaths with those from syphilis. Such a table must of necessity be only approximative and imperfect, as many deaths probably occur which, although indirectly due to syphilis, are ascribed to other causes.

Mortality of New York.

Number of deaths during	1866,	21,206, of which 44 were from syphilis.		
"	"	1867,	23,443,	" 76 " "
"	"	1868,	24,889,	" 77 " "
"	"	(1869,	25,167,	" 77) " "
"	"	1870,	27,175,	" 106 " "
"	"	1871,	26,976,	" 142 " "

Mortality of Philadelphia.

Number of deaths during	1860,	11,568, of which	9 were from syphilis.
" " "	1861,	14,468, " 9	" "
" " "	1862,	15,097, " 21	" "
" " "	1863,	15,788, " 28	" "
" " "	1864,	17,582, " 25	" "
" " "	1865,	17,169, " 30	" "
" " "	1866,	16,803, " 22	" "
" " "	1867,	13,933, " 25	" "
" " "	1868,	14,693, " 43	" "
" " "	1869,	14,786, " 21	" "
" " "	1870,	16,750, " 23	" "
" " "	1871,	16,993, " 19	" "

Unless these figures are incorrect, and I do not think they are so to any great extent, it is apparent that syphilis cannot be ranked as one of the *fatal* diseases, although it may be the cause of death in many instances.

From what has been written, the following conclusions may, I think, be reasonably arrived at :—

1st. That syphilis is a self-limited disease, and the patient, if blessed with a sound constitution, will, in the average of cases, get well, even if left untreated ; but this course exposes to great and serious risk.

2d. That some general idea may be formed as to the future from the character of the earlier lesions ; *this rule, however, is not absolute, as some cases do occur where the early stages are slight and the subsequent ones severe.* They are, nevertheless, I think, exceptional.

3d. That as the disease progresses, the prognosis is less favorable, more especially where important organs are attacked, such as those of the nervous or arterial systems ; and,

4th. That in forming an opinion, due regard must be given to the age and general health of the patient, and in the treatment, attention must be paid, besides the proper use of specific remedies, to strengthening the patient, if debilitated from any cause whatsoever.

16 WEST 32D ST., NEW YORK.

ART. V.—*Cases Illustrative of the Use of the Ophthalmoscope in the Diagnosis of Intra-cranial Lesions.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences, and WM. THOMSON, M.D., Surgeon to Wills Ophthalmic Hospital, Philadelphia. (With a Woodcut.)

CASE 1.—Sept. 28, 1872, Dr. Wm. V. Keating was consulted by John M., æt. 20. Well developed physically ; previously enjoyed excellent health, excepting occasional attacks of intermittent fever ; has been for a

year past acting as clerk, employed from 9 A.M. to 6 P.M.; has been considerably annoyed during the past summer from constant exposure to the effluvia of a water-closet adjacent to his desk. He enjoyed perfect health until six weeks ago, when he was seized with uncomfortable feelings in his head, especially about the nape of the neck; a roaring sound in his ears. He designated these sensations as "apoplectic feelings in the head." The pain was paroxysmal in character, and at times very acute, sometimes producing nausea and vomiting; constant insomnia; had at times a slight wavy feeling in walking; bowels had been regular; urine healthy; appetite normal; no tendency to erections; never had any specific taint; never received any serious injury on the head. Had been recommended in New York to try saline purges two or three times a week, and take bromide of potassium. The affection had been considered as due to his peculiar age and hyperæmic condition of the brain. Finding no amelioration he came on to Philadelphia. In walking the streets he accidentally discovered that he had diplopia. The pulse ranged at that time 50 in the horizontal position, 110 in the erect; heart action regular, but weak; respiration 15; temperature 98° ; slight ptosis of the left lid; some vertigo when suddenly assuming erect position; is always more comfortable lying down; position of head as to body inclining to opisthotonos; has an anxious, dull expression of face, with slight convergence of left eye. The above symptoms continued without much variation. On the 6th Oct. found him in bed, having suffered agonizing pain the previous night and vomited large quantities of bile; vertigo and increase of "apoplectic feelings" forced him to keep his bed. An ophthalmoscopic examination was made by Dr. Dyer, with the following results:—

There was homonymous diplopia; separated images at eighteen feet brought together with prism of 25° ; the external recti were not paralyzed entirely, for either eye could be turned outward by an effort; slight ptosis of left lid; pupils dilated and sluggish; vision = 1 (perfect); no myopia or hypermetropia. On examination with the ophthalmoscope a typical case of "choked disk" presented itself on both sides. The optic nerve was swollen, and careful measurement showed that it projected into the eye .68 millimetre; the eye being emmetropic, the apex of the papilla was best defined with $+ \frac{1}{16}$.

The general number and course of the retinal vessels were normal. The arteries were rather small, and throughout their length presented the appearance of breaks in the continuity of the columns of blood, for a short stretch the vessel looking as if empty, followed by a stretch which was normally filled, then an empty portion, and so on to the end. The veins presented the same alternating stretches, but in a more marked degree, the contrast between the apparently filled and empty portions being more striking. The veins were tortuous and somewhat dilated, and pressure on the eye did not alter these appearances; the fundus was otherwise normal.

Treatment seemed to have no effect; at times would seem quite comfortable, with very little pain in the head, but always preferring a recumbent position. On 13th, Dr. Mitchell was called in consultation; proceeded to push the iodide-of-potassium treatment. Pulse now ranged 48 in recumbent position; 120 in the erect; temperature 98° .

16th. Has had more nausea and vomiting, and suffers from violent pain in the head and constant insomnia. Decided to give small doses of calomel and endeavour to produce ptyalism; opium suppositories at night.

18th. Calomel allayed nausea and vomiting, has had refreshing sleeps. Both papillæ more prominent, the anterior walls of the vessels being seen with $+ \frac{1}{16}$, showing an elevation from the fundus of 1 millimetre.

Between the 24th of October and the date of death, Dr. Mitchell examined the fundus of each eye repeatedly. The disks and vessels remained unchanged, but the acuity of vision certainly declined below the normal.

Passed a restless night; violent pain in the head; pulse in the recumbent position 120; great heat of skin; some numbness in the left side; temperature A.M. 100°, P.M. 101°; bowels costive; heavy deposit of urates.

22d. Symptoms have ameliorated; pain in the head less; pulse down to 50 in recumbent position; no impairment of intellect; no paralysis of motion or sensation. From that date to the 2d of November there was so much improvement in general symptoms as to afford hope that the disease was yielding to ptialism.

Nov. 4th. Ptialism complete; all the symptoms better, save the diplopia and ptosis, which have never abated.

6th. Patient worse; has a well-defined numbness over left side; skin hot; pulse 120 in recumbent position; temperature 101°; seems very despondent, and has all his apoplectic feelings increased, with violent pain in the head and constant vomiting.

10th. Much better; slept well; temperature 98°; pulse 76 in recumbent position; whenever he rises, has a wavy feeling in his head, and his gait is uncertain.

19th. Passed a very bad night; vomiting all night; agonizing pain in the head; face much flushed; temperature 98½°; pulse 50; anxious expression of face; convergence of eye much increased.

25th. Symptoms unchanged; had a well-defined numbness over left side that morning, which continued for fifteen minutes. About 6 P.M. sat up in bed to take some nourishment; asked to have his head put beneath the pillow; turned on his side, and suddenly died with symptoms of syncope. Urine constantly examined, and never gave any indications of albumen.

The chief and permanent symptoms through the case were violent pain in the head; roaring in the ears; occasional nausea and vomiting; diplopia; ptosis of left eye, with strabismus; uncertain gait, and wavy feelings in erect position, with slight opisthotonos; pulse ranging 50 when recumbent to 110 when erect. Bromide of potassium *invariably* from the commencement of the attack when taken increased what he called his apoplectic feelings.

Autopsy.—Body not emaciated. On opening the skull the basilar membranes were found seriously altered, apparently by simple inflammation, being opaque and irregularly thickened, especially about the middle line and directly in front of the pons. The membranes covering the cerebellum were rather thickly dotted on the left side with inflammatory deposits. On the right there were but two such spots, and on both sides these were near to the central fissure.

Between the upper surface of the cerebellum and the dura mater (whence it grew by a pedicle about four lines wide) lay a tumour which had totally obliterated the convolutions of the cerebellum below it, and had indented the organ so as to leave in it a depression one-fourth inch deep even after the tumour had been removed. This tumour was 2½ inches long and 1½ wide and 1½ thick. The surface of the cerebellum on which the mass rested was slightly softened and its membranes inflamed and thickened, while several loose bands of lymph connected them on both sides at the anterior portion of the cerebellum with the cerebral coverings. The interior of the brain was not otherwise altered, and the larger vessels were not diseased. The ventricles were considerably distended by clear serum.

Remarks.—The basal inflammation accounts, as I think, for the lesion of the second and sixth nerves. The downward cerebellar pressure could not, because it would have been too much distributed, or must have affected other nerves more gravely. It could not have so palsied the sixth without more than merely just disturbing others as it did the eighth. The death may have been due to sudden shifting of the mass backwards so as *suddenly*

to compress the bulb, but *sudden* death without new lesion is common even in cerebellar and other brain tumours.

The vomiting, the occipital pain, the disturbance of ocular motion, and finally of vision, with general feebleness without emaciation, and the vertigo, are all symptoms found in cerebellar tumours. The locomotion defects were not marked, and it is curious that with so much serum with meningitis there should have been no mental disturbance.

Amaurosis is commonly mentioned as one symptom of cerebellar tumours, but it occurs also in other tumours (intra-cranial), and may be often due, as was the lessened acuity of vision here, to swollen disks, lasting so long as to compress and injure the nerve fibres in their passage.

The case presented no symptoms related to the generative organs.

Microscopical Examination, by Dr. Thomson.—A portion of the posterior part of each eyeball, containing the papilla, together with the optic-nerve as far back as the apex of the orbit, was removed; and on inspection a swelling 5 mm. in diameter, and 1 mm. high was observed at the intra-ocular extremity of each nerve. The central vessels of the retina were indistinctly seen until they reached the margin of the swelling where they presented their usual appearance. These specimens were immediately placed in Müller's fluid, together with a portion of the tumour, which proved to be a small-celled sarcoma.

When one of the specimens had been sufficiently hardened, horizontal and transverse sections were made, one of which through the centre of the papilla, stained with hæmatoxylin and mounted in balsam, is represented in the wood-cut, enlarged about 15 diameters. The diameter of this disk at the choroid is $1\frac{1}{2}$ mm., and the apex of the swelling rises $1\frac{1}{2}$ mm. above it, whilst the extent of the engorgement on either side into the retina amounts to 6 mm. transversely. Behind the cribriform fascia the nerve suddenly expands to 3 mm. in diameter.

With a low power the swollen portion of the papilla is found to consist largely of bloodvessels so distended with red corpuscles as to resemble an injected specimen. Upon tinting with carmine little or no differentiation of tissue is observed, but upon the use of logwood the older or formed parts, as for example the sheath of the nerve, the sclera, and the nerve fibres, assume a lavender hue, whilst the granular layer of the retina, and the nuclei of the coats of the bloodvessels, and of the entire connective tissue are stained a deep purple. The course of each capillary vessel becomes apparent by the stained nuclei in its walls, and it is at once evident to the observer that the vascular supply of this disk is pathological, and that the enormously multiplied vessels contribute largely to the swollen condition of the papilla.

On teasing out a portion undoubtedly pathological, and using for its examination a No. 9 immersion system of Hartnack, one finds the axis cylinders and the processes of the neuroglia undistinguishable and tinted alike of a lavender hue, while the nuclei of the neuroglia, oblong, oval, and round in shape, and of varying size, are recognized by their deep purple color. No degeneration of the axis cylinders could be found. No change further than those above described was observed.

On a comparison of the sections of this nerve with those tinted and treated in the same manner and believed to be normal, it is evident that

the purple nuclei are infinitely more abundant in the one than the other, not only in the swollen intra-ocular end of the nerve, but at the cribriform fascia, and throughout the entire nerve-trunk behind it, as far as it was examined. In the accompanying wood-cut an effort has been made to disig-



Magnified 15 diameters.

nate the lines formed by the tinted nuclei that lie thickly strewn in the inter-fascicular spaces of nerve-bands as they pass through the cribriform fascia, where they are so abundant that they give a purple hue to the entire field as observed with a low power. Whether these tinted parts are emigrant cells undergoing development, or the result of a proliferation of the neuroglia proper of the nerve, involves the whole mooted question of inflammation, and must remain undecided for the present, but it would seem evident that this entire nerve has undergone a pathological change, and that it is at present in the condition of vascular engorgement and hyperplasia of its connective tissue.

The sheath of the nerve and the inter-vaginal space appear normal, and the changes in structure seem confined to the nerve itself.

CASE 2.—M. C., female, æt. 21, of a healthy family, was a vigorous person but subject to severe headaches, especially just before her periods. For a year previous to her death she had occasional double vision. October 7, 1872, she had an attack of sore throat, with aches in all the limbs and in the back and head. Little was thought of this as she had taken excessive exercise the day before, and as she became unwell on the 8th: on the 10th, her headache in place of lessening was worse, and her friends noted that her eyes squinted slightly at times and looked dull and lifeless. Meanwhile, on the 11th and 12th, the cephalalgia and sense of vertical pressure on the head were described by her as unendurable. She was still about, but would sit upright with the eyes fixed. She said any movement hurt her and that the eyes especially were pained by motion. On the 14th, a hypodermic injection of morphia was given with present relief of pain but after-effects in the way of nausea and a sense of increased pressure on the

brain. Up to this time and indeed until near the end of her illness, it was regarded as neuralgic and was treated chiefly by quinia and morphia. On the 14th, the filling of a tooth which proved sore from an abscess in the fang was removed without relief. She was thenceforward kept more comfortable by hypodermic injections twice a day; not over $\frac{1}{4}$ grain being used on each occasion. During the week she suffered intense pain especially at night, accompanied with more or less fever, with at all times a tendency to keep the head thrown back by a pillow under the neck. On 19th October, she felt better, but spoke still of the horrible sense of weight on the head, and up to this time there had been no delirium. At 10 P.M. the usual injection of $\frac{1}{4}$ grain was given. At 8 A.M. on the 20th, she was asleep but looked pale and breathed heavily and was sweating profusely. At 10, she seems to have had a slight spasm. At 12, she became slightly unconscious but recognized some of those about her. Her power to swallow was thenceforth impaired and she passed into a state of profound coma. On the 21st, the neck behind the ear became remarkably red and swollen, and on the morning of the 22d October she died quietly.

As the death took place in Europe the body was embalmed, as it proved most inefficiently, by throwing into the stomach and rectum large quantities of dissolved chloride of zinc. Six weeks after death Dr. W. W. Keen was requested by Dr. Mitchell to make an examination of the head with the hope that some explanation of the symptoms would be found.

Some of the tissues were decomposed and the brain itself quite diffuent, but it was still plain enough that all the upper and anterior portions of the membranes covering the cerebral hemispheres had been intensely inflamed and the basal membranes offered like appearances but less distinct in character. The brain changes were of course undistinguishable. From the lower anterior edge of the right parietal bone projected an exostosis $\frac{1}{4}$ inch thick, an inch long, and half as wide. As many as forty other exostoses, all of them small (1 or 2 lines wide by 1 to 3 long) grew from the various cranial bones on the arch and sides but not on the base, while the sides of the longitudinal sinus were plated by long flat irregular masses of bone which passed $\frac{1}{4}$ inch downward into the great fissure below the sinus. These, of course, grew from the dura-mater. Some of the soft parts about the head were greatly altered, others were wonderfully preserved. Thus on carefully removing the back of the eyes I found that the optic disk projected clearly and distinctly above the retina. It was quite firm and hard, and there must have been not only œdema and congestion but such proliferation of its connective tissues as to leave it thus enlarged and prominent despite the changes I have described.

The above I have ventured to add to this collection of cases of brain tumour because of its rare interest. It was regarded by those in attendance as a case of congestion of the base of the brain, but it proved to be an example of exostoses which must have been the growth of years, and which during times of congestion were more and more severely felt by the brain on the limits of which they intruded. At length, a sharp influenza occurring at a menstrual period proved sufficient to raise this occasional irritation to the grade of inflammation. I was amazed to find the right disk (the only one examined) as I described it.

Remarks.—A high degree of very painful uncertainty as to the cause of the death of this lady remained in the minds of her friends, and was dissipated only by the post-mortem examination made so long after her decease.

The examination of the fundus by the ophthalmoscope in her last illness would have given an early warning of her danger, and would have prevented the suspicion that death had followed upon the use of therapeutic agents. Indeed, it is not improbable that, months previous to her death, when she first complained of diplopia, an examination would have revealed the condition of choked disk and given the note of alarm to herself and her friends.

CASE 3.—Dr. Mitchell was asked by Dr. Hamilton in May, 1872, to see Mary C——, æt. 16 years. Dr. H. had attended her through a recent attack of typhoid fever, which presented the unusual symptom of more or less steady pain in the head throughout the attack. She was convalescent and afoot about three weeks, when she began to complain of a frontal headache, and at times of rheumatism in the back of the neck. Recently the headache had increased, and she complained of noise like falling water in the right ear; found her lying in bed, flushed and feverish; pulse 110; respiration 30, and interrupted at brief intervals. The fever was worse at night, and she had had for three days nausea, at intervals; the scalp over the right eye was œdematous, and elsewhere was sore; sudden movements increased her pain notably; the chest presented evidence of slight bronchitis, but there were no cardiac lesions; the right eye had drooped a little, and there was, at times, double vision, with loss of power over the right internal rectus, and the pupil was a little dilated and sluggish. The left eye-ground was nearly normal, with, perhaps, too much colour in the disk, as compared with the right, which was somewhat swollen, so that the summit was seen clearly with + 16 of Loring's ophthalmoscope. It was grayish and hazy, and the vessels leaving the disk looked as if covered with ground glass. There were no hemorrhages, old or recent, and the remainder of the eye-ground was, perhaps, less red than that of the left eye. On the third day after, the headache was intense; pulse 120; breathing broken, and the fever high. Two days later the eyes were unaltered, save that the muscles controlled by the third nerve were totally palsied on the right side, and partially on the left; the acuity of vision was not much impaired. The disks presented the same appearances ten days later, just before death.

On the fifth day her deglutition became impaired and the delirium, which was previously rare, increased by degrees, while the headache, flush, and fever grew worse; no other notable changes took place; but there was simply a slow increase in the gravity of all the symptoms, until at the seventeenth day she could not swallow at all; the constipation became obstinate; coma set in, and she died on the twenty-first day.

The diagnosis was sufficiently clear as to the presence of meningitis. I believed also that there was a tumour, and that it was probably near the base of the brain. Its nature was made more clear by the family history which Dr. Hamilton thus detailed:—

I. M. C. her father died of "chronic cough," æt. 61; his wife of consumption, æt. 52.

Their sons, W. C., died æt. 30, of consumption; P. C., with symptoms of meningitis, æt. 23.

Mrs. M. C. F. died of phthisis, æt. 34; I. M. C., æt. 46, of abscess of the lung and paralysis.

Eliz. C., daughter of the above named, W. C., died æt. 18 of phthisis.

Mary C., her sister, was our patient; there are still alive three other children; one is healthy, one is hysterical and feeble, one is tubercular, and this history left little doubt as to the presence of tubercle in this case.

Autopsy.—The body not wasted; the brain healthy, except at the base, where the membranes were matted together, and thickened by tubercular meningitis. One large mass, the size of a walnut, was imbedded in the anterior and lower part of the posterior cerebral lobe. So coarse was the lesion that I wondered how the other nerves than the third could have escaped; yet the fourth and sixth were not affected in any marked degree. The optic disk of the right eye was removed and preserved for examination. It was distinctly swollen. The details of its microscopic study will be found below.

Remarks.—The diagnosis of meningitis in this case was easy; that of tumour was less reliable, although it also proved to be correct. I was struck, at my first visit, with the curious odour of the breath, which is nearly always peculiar in cases of meningitis, and I find it alluded to in many of my notes of cases of cerebral disease.

Microscopical Examination of Optic Disk.—One inch and a quarter of the optic nerve with portions of the tunics of the ball surrounding the disk were placed in Müller's fluid, hardened and cut transversely and horizontally. In the removal of the specimen, the retina was so lacerated as to render an accurate description of the dimensions of the swelling impossible, but its apex is one mm. in front of the cribriform fascia.

It is well known that tinting with carmine is unsatisfactory after the hardening has been effected by chromic acid, and the sections when stained with carmine gave little evidence of any pathological condition; but upon the use of hæmatoxylin it became evident that the nuclei of the neuroglia were infinitely more abundant than in normal nerve, and it seems evident that this entire nerve has undergone a hyperplasia of its connective tissue.

CASE 4.—In the *Philadelphia Medical Times*, Nov. 16, 1872, will be found the report of a "Fatal Case of Purulent Aural Catarrh," by Dr. Harlan, which becomes of interest in this connection, since the diagnosis of intra-cranial inflammation was rendered more certain by the use of the ophthalmoscope. Dr. Thomson saw this patient a few days before death, and assisted at the autopsy, and can confirm Dr. Harlan's description of the condition of the disks in every respect; they were both much swollen, with obscured margins; their arteries were contracted and veins engorged. The rest of the fundus was normal, and its refraction, as determined by the ophthalmoscope, emmetropic, whilst the highest point of the swollen disk could be seen with a $+ \frac{1}{8}$, indicating a swelling of this part above the fundus of 1.5 mm. The acuity of vision was not accurately determined, but she was able to read small type fluently.

After death, an abscess containing an ounce of pus was found in the middle lobe of the left side of cerebrum; the petrous portion of the temporal bone was found carious, and covered with a thick deposit of lymph, and the membranes of the brain were extensively engorged on that side. It was found impossible to obtain the disks, but the optic commissure was placed in Müller's fluid, hardened, cut into thin sections, stained with logwood, and mounted in balsam. In comparing these specimens with those taken from the optic commissure of a man who died from a traumatic

cause, and similarly treated, it seems evident that the bloodvessels are more numerous, and in any given field of the microscope, the stained nuclei much more thickly strewn through the tissue of the one than the other. There is no abnormal appearance in the intra-vaginal space, nor do the nerve fibres appear to have undergone any change.

CASE 5.—D. L., clerk, æt. 31, several years ago was intemperate and 18 years back had chancre and subsequent sore throat, not certainly of syphilitic nature; has lost most of his hair, following an attack of typhoid fever eight years since; has had no skin disorders and has no present evidence of syphilis; is married and has two healthy children, and of late years has been a steady man. Late in October he consulted Dr. Mitchell, having suffered for several weeks with pain over the left eye. He said that he had often had headaches, but that this was a new pain and was nearer the skin. The supra-orbital nerve was found tender at its exit, and the pain seemed to run upward in its track; digestion good; heart normal as well as the lungs, and the teeth were sound. The pain came on daily about 10 to 11 A.M., and grew worse up to bed time, causing unilateral flushes in the evening. The disorder seemed to be a quotidian neuralgia, but after six treatments with galvanism Dr. M. found that each of them either augmented the pain at once, or within a short time. This rarely occurs, and when it does, should lead us to suspect the existence of some organic cause of trouble. About this time Mr. L. ceased his visits. November 19. He came back in a condition which explained the probable cause of his disease.

The pain was as severe and was still so acute at night as to prevent his sleeping. The type had changed, the supra-orbital nerve was still tender, but the pain in its track had ceased, and in place of it there was a dull deep ache in the left temple and at the frontal prominence. The scalp in these regions was tender and at times slightly cedematous; the left lid was partially palsied; the pupil slightly dilated, and the left internal rectus muscle insufficient, causing squint and varying amounts of double vision; the conjunctiva was diffusely but not deeply reddened, and the eye-ground and disk were absolutely normal on both sides and at repeated examinations; hearing, touch, taste, and smell normal; pulse 90°; temperature on three days at 3 P.M., he having walked to my office, 99° F. He was placed on iod. potass. five grs. thrice a day, rising in a week to one 3 daily.

28th. Pain concentrated on the frontal prominence; pupil smaller; ptosis and squint as before; acuity of vision normal.

Dec. 4. Much worse; pain steady day and night; blisters with morphia $\frac{1}{2}$ gr. dressings daily, and these failing, $\frac{1}{4}$ gr. hypodermic injections, twice a day, with leeches over point of pain on alternate days.

16th. Much the same. There is now a new point of pain over the left outer canthus; all the muscles controlled by the third nerve are now palsied; pupil dilated; eye-ground still normal; ordered mercurial inunction in arm-pit twice a day, and bichloride of mercury $\frac{1}{12}$ gr. thrice a day.

21st. Conjunctiva diffusely congested; eyeball projects slightly; left disk is redder than that of the right side; memory failing; has become emotional and at times cries with the pain which is now higher up above the edge of the hair and only in this one place. For some days the ice-bag (dry-cold) has been used over the seat of pain, but as it has always been unpleasant, and he constantly removes it unless watched, it is discon-

tinued ; urination difficult ; bowels constipated ; gums slightly sore. The mercurials were laid aside, and at times afterwards resumed so as to keep up the mercurial impression, and about thirty grains of iodide of potassium were given daily. Bromide of potassium seemed to have the effect of increasing his headache.

24th. Very feeble ; nocturnal fever ; the temperature usually 100° F., A.M., and rising to 101° , to 103° at night ; slight nausea at times ; is now in bed all the time and too weak to stand : the eye remains as before ; about this time he began to have more distinctly a slight œdema of the left frontal region. From this time he failed steadily ; the mind wandered although he had brief but perfectly lucid intervals, and then the pain was less, a day or two later he became violently delirious, and had one short and slight attack of spasmodic movement in the right arm and hand, after which he fell into a comatose state and died quietly, January 11th.

The examination was limited to the head, as I was not allowed to open the other cavities.

Autopsy.—Dura mater thickened and velvety appearance of inner surface observed ; pia mater slightly opaque, with well marked œdema and underlying effusion, and considerable venous congestion, together with small patches of lymph on upper surface of pia mater ; meningitis on supra-orbital plate (left) and to a slight extent along left side of longitudinal sinus ; none at the base. On removing the brain a small body the size of a pea, of reddish-brown colour and firm consistency, was found attached to the dura mater immediately behind and to the left of the left posterior clinoid process, and just above the cavernous sinus, touching but making no pressure upon the internal carotid artery. The track of the left third nerve was apparently directly under the tumour.

Both middle fossæ of skull were roughened with many spiculæ of bone and the upper surface of basilar process was carious.

On removing the fundus of left eye the optic nerve was seen to be cupped, but no choking of the disk was observed.

Microscopical Examination of the Disk.—The optic disk with a surrounding portion of the tunics of the ball and one inch of the optic nerve were immediately placed in Müller's fluid and hardened ; sections were then made, tinted with logwood and examined after being mounted in balsam. There is no swelling of the disk ; no increase of the number of vessels, and no other pathological change. In the horizontal cuts through the disk, the retinal fibres part slightly in advance of the cribriform fascia, and pass to the right and left, having at the margin of the disk, and as far as they can be seen, the normal appearance. With a high power the nerve behind, at, and in advance of the cribriform fascia presents normal appearances ; there is no increase of the nucleii ; no evidence of hyperplasia of the neuroglia, and no degeneration of the axis-cylinders.

Remarks.—On closer study after its removal, Dr. Bertolet found that the tumour must have grown beneath the nerve, which, as it increased, became spread out upon its upper aspect. The growth was a psammoma, the angiolithic sarcoma of Ranvier, and has been described by Dr. Bertolet in the Proc. of the Phil. Path. Soc.

This case seems remarkable for various reasons. It was no doubt syphilitic, judging from the history, the exostoses, and the basal caries, but I am not aware that the "sand tumour" is especially related to this constitu-

tional vice. I suspected the presence of a large growth in the anterior left cerebral lobes, causing inflammation on the third and fifth nerves, and causing pain by involving certain of the meningeal branches of the fifth nerve on their passage, the pain being referred to their terminal distribution. Such I believe to be a common cause of meningitic pains remote from the region directly disturbed. In fact there was meningitis, here and there, and a small tumour, mischievous to one nerve only. Considering the condition of the bones, it is surprising there was so little inflammation or effusion, yet there had been enough of mischief to kill, but absolutely no swelling of the disk up to three days before death.

CASE 6 — J. Q. L., a merchant, æt. 56, resident in a neighbouring city, married, and the father of five healthy children. Although of gay habits in early life, he does not know that he ever had any specific malady, such as syphilis, while at no time has he been a hard drinker. Of late years he chewed and smoked tobacco, but not to excess. He has had no causes of anxiety; is in easy circumstances, and of unblemished blood. Has at times an obstinate mucous discharge from the nose and throat. In 1869, he had at times a little vertigo, without nausea. In 1870 these lessened, and he began to have pain on the top and back of the head behind the right mastoid process, at first intermittent, recurring in the evenings, but absent for many days, and then present every day for a week or more. In Dec. of 1870 and Jan. of 1871, the pain became more severe and more constant, and at length terrible, behind the ear, especially at night, when the torture grew so excessive that he lost all control of himself and wept like a child. The neuralgia was confined to the left occipital region and ran up on to the scalp, but troubled none of the anterior branches of the fifth nerve. With it, when most grave, there was a symptom which marked the height of the attack, and which Dr. Mitchell thus far has seen only in cases of specific neural pain. On the scalp, at the upper limit of the painful region, arose swellings of the skin about two inches in circumference, and at least a quarter of an inch in height. They were red and excessively tender. During January, 1871, he began to sleep badly, remaining awake sometimes for two or three nights; while his memory failed rapidly, his power of thinking became enfeebled, his countenance assumed an imbecile appearance, and he became as emotional as an hysterical girl. Meanwhile the pain grew worse, and early in February he began to have twitching of the *left* thumb and of the interosseal muscles. Very soon they attacked the arm and forearm also, and then extended to the face, after which the attacks returning daily, or many times a day, affected his consciousness, and always beginning in the thumb ended in a bilateral fit, with foaming at the mouth, tongue-biting, and subsequent coma. On recovering, he usually saw double, or had subjective ocular delusions as to the furniture being in motion, a kind of protracted giddiness. I saw him in many of the lighter attacks, which in April and May took the place of the graver fits. There was one most interesting fact. During the fit the muscles of the outer ear moved during the convulsion, and on inquiry I learned that he had the power to move the ear at will. Even the muscles of the tragus and anti-tragus could be seen to twitch. In April, and when I saw him in May, the left hand was liable to constant twitches, but there were then no severe fits.

Dr. Mitchell saw him first on May 20th, and made these notes of his hapless condition. He was in bed moaning with the nearly steady pain of his neuralgia; his mind and memory were quite useless, and he wept at the least cause for emotion. He slept ill or not at all, and had daily attacks of a convulsive nature, rarely to loss of consciousness, and usually on the left side and in the left face. He had incomplete left hemiplegia, and could not walk at all; there was no loss of sensation nor nausea, and no heart disease. Pulse ranged from 90 to 100 in the morning, and 110 to 120 at night, with slight fever and nocturnal rise of thermometer; 99 in the morning, 101 at night; no albumen in urine; bowels constipated.

This seemed to me indeed a hopeless case, although, if it were of specific origin, as I suspected it to be, there was still a chance of relief.

24th. He began to take twenty grains of bromide of lithium thrice a day. A blister was put behind the right ear and kept open. On the second night he slept five hours, and still longer next day.

28th. Continuing the bromide he took $\frac{1}{16}$ th of a grain of corrosive sublimate in pill after each meal, and iodide of potassium in rising doses, which in a week reached to $1\frac{1}{2}$ 3 a day.

The progress was thenceforward amazing; the fits ceased; the palsy lessened day by day; the pain left him; memory and power to reason came back; he slept well and steadily, and ate eagerly.

A summer in the mountains aided him greatly, and in November, 1871, he could walk a mile, the foot dragging a little. The hand still twitched a little, especially when he was excited; and the flexors of the arm had become somewhat contracted, so that, owing to weakness and this cause, he had but little use of the hand. A long galvanic treatment of the shortened muscles, with Faradism of their opponents, failed, as it does usually, to relieve this trouble, nor was a course of *massage* of any greater value.

Ceased to use the iodide in January, 1872; but twice having ventured to lay aside the bromide, he was forced to return to it by the occurrence of a unilateral convulsion. He is now well, save for the permanent partial loss of muscular power in his arm. He takes steadily forty grains of bromide of sodium daily.

Remarks.—I have little doubt as to the specific nature of this case—in fact what may be called the therapeutic diagnosis would be almost conclusive. Yet save for a slight roughness of skin and the persistent mucous discharges—sometimes offensive—there was no symptom to support this belief, no bone or skin troubles at any date; yet this is just what we see many times in syphilitic neuroses, which seem most apt to occur in persons who have had no cutaneous or other evidence of constitutional disease. The unilateral spasms without unconsciousness by degrees assuming the common type of epilepsy also agreed with the habits of a specific disorder of the brain.

I wish also to call attention to the curious swellings like urticaria, which followed the attacks of pain; these also, according to my experience, are seen only in cases of pain in the head, probably due to local meningitis and of specific origin.

I have never before noticed the convulsive movements in the muscles of the auricle and in those attached to the ear, but possibly this may be more

common than I supposed it to be. Since making this observation I have discovered that even the intrinsic auricular muscles of the tragus and anti-tragus may, in many persons, and even in the aged, be called into action by induced or galvanic currents, which makes it probable that they have some distinct functional use and are habitually in action, since otherwise it seems hardly conceivable that they could retain their myability. I presume that in this case there was a syphilitic growth in the postero-lateral brain region with a local meningitis, the extent of which does not admit of exact definition.

The eye symptoms are described by Dr. Thomson, who saw the case in consultation.

On June 7, a careful ophthalmoscopic examination of both eyes was made. Acuity of vision of each eye was unimpaired, and with the glass which corrected his optical defects he was able with either eye to read $1\frac{1}{2}$ Snellen. Both pupils were then fully dilated and the accommodation paralyzed with atropia. With the mirror the refraction was determined to be hypermetropic $\frac{1}{20}$ at the region of the macula. The media were transparent, and each retina was perfectly normal in appearance. The disks both presented the characteristic signs described by Mr. Allbutt as ischæmia papillæ or "choked disk," and the chromo-lithograph given as the frontispiece of his volume on the "Use of the Ophthalmoscope in Diseases of the Nervous System," might have been made from the case now under consideration, so faithfully does it represent the appearances. Each papilla projected into the vitreous humour so that its highest portion could be seen with a $+\frac{1}{4}$, showing by a calculation of the difference between the refraction of the fundus and the apex of the disk, an elevation of the latter of about 1 m.m. The diameter of the swollen papilla was more than twice that of a normal disk and its edges were ill defined. The arteries were smaller than usual, but the veins were greatly dilated, very tortuous, and here and there hidden from view in the swelling, at the margin of which they seemed to fall from the view of the observer armed with $+\frac{1}{4}$ and became very indistinct, to reappear again perfect in definition with $+\frac{1}{20}$ on the other portions of the fundus.

This gentleman had been almost abandoned as a hopeless case of softening of the brain following apoplexy, but the mirror dissipated this idea, since clinical experience shows that choked disk seldom or never results from hemorrhage, or acute or chronic softening of the cerebral substance, whilst by its aid also a theory of the disease was formed which led to the use of therapeutic measures which were followed by brilliant results.

On July 22, the eyes were again examined, and with $+\frac{1}{20}$, which corrected his hypermetropia, his acuity of vision was $\frac{1}{4}$; there was no swelling or appearance of exudation about either disk; the outlines of the papillæ were distinct; the color was pink; there was no evidence of any atrophic change, and the bloodvessels had resumed their normal appearances.

It would manifestly be impossible in this paper to do full justice to all the observers who have written on the connection between intra-ocular changes and the diseases of the brain, and the reader is referred especially to the valuable work of Mr. Allbutt, *On the Use of the Ophthalmoscope in Diseases of the Nervous System*; to the valuable contributions of Mr. Hughlings

Jackson, and to an interesting and well-illustrated paper by Pagenstecher in the Royal London Ophthalmic Hospital Reports, for November, 1871, for a full discussion of the subject. It has been practically established however, that the condition now known as "choked disk" may become, as in Case 1, the chief if not the only symptom by which a serious brain lesion may be recognized by the examination of the fundus of the eye; that this form of neuritis may exist without the slightest impairment of vision, and that the ophthalmoscope becomes of imperative use in treating nervous diseases, and should be employed in the examination of all cases as a part of the routine, as advised by Mr. Hughlings Jackson, "whether the patient complains of any defect of sight or not."

That this apparently rude lesion of the optic nerve should exist for months, perhaps, and pass off under appropriate treatment without causing any loss of visual power, as in Case 6, led to the belief that a mechanical cause, and not a true local inflammation of the disk, would be found to account for the swollen and congested condition of the papilla; and this view was the one propounded by Von Græfe in a classical paper published in 1866, in which he maintains that any increase of intra-cranial pressure retards the circulation in the cavernous sinus, then in the ophthalmic vein, and finally in the central vein of the retina, which, passing with the optic nerve through the dense and unyielding sclerotic ring, is there compressed and in part strangulated, and that aided by the "multiplying action of this ring," the obstruction to the return of the venous blood is able to induce the œdematous and swollen condition of the papillæ. A second theory, based likewise upon the increased pressure within the cranium, has been advanced by Schmidt, who believes that fluid is forced from the arachnoid cavity along the inter-vaginal space of the optic nerve, and into the canal system of the lamina cribrosa, and there gives rise to the swelling and congestion. Benedict gives yet another explanation, and ascribes the swelling to a morbid innervation of the vaso-motor system of nerves, which causes a hyperæmia with changes in the nerve-fibres of the disk and retina, induced by the reflex irritation of a morbid process anywhere in the brain.

Against the last theory may be adduced the clinical facts set forth in Case 5, where the symptoms previous to death would indicate a high degree of irritation, evinced by severe pain and violent delirium, and where the autopsy revealed rude changes of the membranes and caries of the basilar process, but where the disks retained their normal appearances both before and after death, and presented, even under microscopic examination, no signs of disease. So far as the truth of Schmidt's views are concerned, other competent observers have failed to convince themselves of the existence of the system of canals in the lamina cribrosa, although a dilatation of the inter-vaginal space has been frequently described; whilst the idea of Græfe is made doubtful by the study of the anatomy of the veins,

which proves, according to Sesemann, that the anastomoses between the ophthalmic vein and the facial are so abundant that no great retardation of blood could result from pressure upon the cavernous sinus, so long as the facial veins are patent. In spite of this objection it would appear from a study of the cases here presented, that an inflammation more particularly of the meninges about the base of the brain, whether increasing the intracranial tension or not, is competent to produce an engorged condition of the optic papilla which becomes a most valuable diagnostic sign of lesion of the brain, whilst vision may for an indefinite time remain perfect; but that a true neuritis may ensue, indicated in the specimens described, by an increase of the bloodvessels, and a hyperplasia of the connective tissue of the nerve, which would eventuate in time in atrophic changes with partial if not entire loss of sight, accompanied by a shrunken and pallid condition of the disk when examined by the mirror, and by marked cicatricial changes under the microscope after the death of the patient.

For the ophthalmic surgeon this condition of choked disk has assumed a practical aspect, since no less an authority than Dr. Wecker has proposed for its relief to incise the sheath of the optic nerve with an instrument which he exhibited and described to the members of the International Ophthalmological Congress in London, in August, 1872; and in the eighth volume of the Reports of Saint Bartholomew's Hospital, will be found a history of a case of optic neuritis treated after this manner by Mr. Henry Power, in which the improvement was so slight as to enable the patient to distinguish day-light only, whilst no change whatever in the appearance of the disk could be observed by the ophthalmoscope after the operation: the futility of this might be safely predicted from an examination of the specimens above described, since under the tinting with logwood, they appear to present evidences of overgrowth of the connective tissue throughout the entire nerve-trunks, from the papilla to the optic commissure, and to illustrate the following description by Rindfleisch:—

“Non-inflammatory differs from inflammatory hyperplasia of connective tissue by its slower rate of progress. A hyperæmic dilatation of the vessels is the starting point of the morbid process. This is associated with an emigration of white corpuscles, causing an increase of bulk and a thickness of the connective tissue; the sheaths of vessels being often from three to five times their normal thickness. These cells are transformed into fibrillar tissue in the course of time, and the process is so similar to inflammation that no fault could be found with those who consider this as chronic inflammation.”

In conclusion I would call attention to the value of the determination of the extent of the swelling into the vitreous humour, which can readily be done by observing with what convex glass the highest point of the papilla can be distinctly seen by the ophthalmoscope, used with the erect image. A simple calculation enables one to know how many parts of a millimetre the apex of the swelling projects beyond the fundus, and permits one, in watching the progress of the case, to note any advance or retrogression of the swelling that may occur during the treatment.

ART. VI.—*Case of Membranous Enteritis.* By B. VAN VALZAH,
M.D., of Spring Mills, Centre County, Pennsylvania.

THE following case is extracted from a thesis presented for graduation at the Jefferson Medical College, and with the consent of the Faculty I place it on record:—

Miss ———, æt. 40 ; menstruated at fifteen ; at seventeen she had transient suppression of menses, with subsequent dysmenorrhœa, which has continued almost ever since. In 1850, being then eighteen, she had enlargement of the lymphatic glands of the neck. About this time (after exerting herself in lifting) she was seized with such intense pain in her back as to cause almost immediate syncope. It lasted several days, and was accompanied by great nervous irritability. Her back has ever since remained weak and sensitive. She was attacked thus at various intervals for several years. During 1851–2, she was subject to bilious colic. She also, for years, experienced erratic neuralgic pains. In 1857, her eyesight became materially impaired, and remained so for six or seven years. The affection was supposed to be of a nervous character. In 1864 she experienced on moderate exertion some difficulty in breathing, which recurred several times during the following spring, and about June she had an attack which seemed to threaten fatal apnœa. This attack was entirely nervous ; she had had no previous pulmonary disease, nor was there during any attack secretion in the bronchial tubes. The paroxysms were without premonition, and lasted two hours. One or two attacks of almost equal severity followed within a few months, then milder ones for about two years, when they entirely disappeared ; for several years subsequently she enjoyed comparatively good health. In the spring of 1868 she took a severe cold ; had soreness of her flesh ; bowels were torpid and there was a feeling of tightness over the chest ; the latter continued for some time, when it was discovered that there was great contraction of the skin of the upper part of her body, the arms, head, and neck all being implicated ; the hollows about the neck and armpits were entirely obliterated, although these had been quite marked. The muscles and bones were so tightly bound in as to render their contour perfectly distinct. The skin over the stomach was exceedingly tense. A sense of constriction was felt in deglutition. There was little motion of the head backward or forward, and the exertion of attempting to nod or stoop caused a constant feeling of soreness in the scalp. The skin was bluish in colour ; felt hard ; was without wrinkles, and could scarcely be pinched up. There was however little disturbance of her general health. This condition continued for nearly a year, alternately worse or better, and then gradually ceased. During the summer of 1869, she lost flesh and strength ; had a quick pulse, and a constant feeling of lassitude ; did not feel rested, although she slept well ; she had a constant disposition to yawn, and fainted on slight exertion ; appetite good, but there was an apparent want of assimilation. In the fall she had occasional attacks of pain in her sides and back. Towards spring there was considerable improvement, and for a year she gained in weight and strength. In February, 1871, as the result of catching cold, she was afflicted with faceache, torpor, and tympanitic distension of the bowels, with constant soreness, but no fixed or acute pain. In April the

soreness gave way to paroxysms of sharp pains, limited to a spot about an inch below the umbilicus. The pain was of a darting tearing character, readily produced by a jar, but not affected by steady pressure. The attacks always preceded menstruation. The tympanites disappeared after May, but the spells of pain continued frequent, though short, and always in the same place. In June her stools were muco-sanguinolent and very offensive; she had frequent feelings of chilliness and an apparent want of circulation in the capillaries of the skin. This chilliness continued all summer and autumn, usually more marked in the morning. Digestion remained good, and she slept well.

The last week of August she had an attack of diarrhœa lasting two weeks; with much disturbance of her general health. About the middle of September there was an unusually severe recurrence of pain in the old place, extending to the back, accompanied with nausea and vomiting. After a few days she was apparently as well as before the attack. At this time her appetite began to fail, and she had almost constant diarrhœa. October 4th, pain began again about 8 o'clock P.M., attended, as before, with nausea and vomiting, with a disposition to go to stool, but felt too weak and faint. At noon while at stool she had a copious hemorrhage from the bowels, which recurred twice within the next hour, and she passed in all nearly a quart of black, tarry, and horribly offensive blood. Though greatly weakened she rallied, and in a week was much better. October 11th, acute pain with sick stomach; during that day and the next day she passed with her feces a quantity of jelly-like matter somewhat similar to the white of an egg. The subsequent stools were dark, turbid, and rather scanty; these passages recurring each Monday for five consecutive weeks, always preceded by pain and nausea, which disappeared with the appearance of this matter in the stools. During the remissions she suffered from nausea, a feeling of depression, and chilliness every morning. There was during this month a constant, though not very marked increase of temperature, and acceleration of pulse.

December, considerable improvement; appetite variable, occasional nausea; bowels acted regularly and stools nearly natural. She was then taking (besides nutritious food, tonics, and opiates) bismuth and tannin, afterwards argent. nit. in pill, ol. terebinth., occasional counter-irritation with iodine; the best result however was obtained from the use of the neutral mixture, the effect of the other drugs being entirely negative. About the first of January, 1872, there was an increase of nausea, almost total loss of appetite; her head felt dull; nose became sore and itchy; gums inflamed; chilliness; lower extremities sore and stiff. These symptoms continued for three weeks, the pain and soreness in her limbs becoming more and more marked. Then there was an eruption on her legs, feet, and arms; feet somewhat swollen. The eruption consisted of spots varying in size from a pin-head to a dime, of a bright red colour, not perceptibly raised above the surface, and exquisitely sensitive to the touch, and continued several weeks; the feet were somewhat œdematous. January 23d, she had an attack of pain which gradually increased in severity until it became fearful, darting to the back and thence all through the body, attended with violent retching and vomiting, and a sense of constriction about the heart. The pain was ultimately relieved by hypodermics of morphia. She was extremely prostrated; sphincters were relaxed, and everything she attempted to swallow, even a sup of cold water, was regurgitated; she slowly rallied and a gradual improvement took place. There was no

evacuation of the bowels for three or four days subsequent to the attack, when she passed a quantity of membranous matter with the feces. The appearance of this membranous or diphtheritic substance was almost like boiled maccaroni, or not unlike sections of tapeworm. Part of it was in coils, part in strips, of a white homogeneous, semi-solid character. It was not very tough, but permitted of considerable manipulation. No tests were applied. It did not dissolve in cold water, but did so almost entirely in water at 70° F. These discharges continued every other day for two weeks; slight pain was experienced daily; increased mental activity was observed; scybalæ were passed about this time of a tenacious tallow-like consistence, covered, and accompanied with, a good deal of mucus. Improvement continued for a month, when there was another attack very similar to the previous one, except that the pain was not nearly so severe. The membranous matter was scarcely as consistent as that formerly passed, nor in as large quantity. Her urine during this time was scanty and high coloured; continued improvement followed.

The next attack did not occur for five weeks, her stools in the mean time being nearly normal but containing occasionally scybalæ, coated with mucous and sometimes a lime-like crust. The third attack was still less severe than the second, and was followed by greater improvement. Since then she has had three attacks at regular, though gradually increasing, intervals up to the present time. Occasionally, however, they display a good deal of irregularity both as to time and severity. Once in about two months she has an attack of pain in the bowels, preceded by chilliness, aching in the extremities, soreness of the mouth or eyes, urine high coloured and scanty, and followed by a discharge of more or less mucus, separate from and not mixed with the fecal matter, and as she described it, "sometimes like the scum on lime-water." She does not pass membranous matter with every attack, and shreds are fewer and smaller. Frequently she passes lumps of matter very like balls of putty, of a greasy tenacious character. During the intermissions her evacuations are natural. Her appetite is usually good, but her digestion is not strong; skin and temperature natural; pulse varies from eighty to ninety. She menstruates regularly, but for the last two years or more she has had considerable leucorrhœa. Some months since an examination was made, and ulceration was found around the os uteri, extending into the cervix. This was treated locally, and the symptoms soon ameliorated. Her urine the greater part of the time is natural, but sometimes, especially during attacks of pain, deposits much reddish sediment; for this she takes potass. bicarb. and citric acid with relief. She thinks she gets over an attack quicker by taking the neutral mixture, than without it. She has been taking comp. tinct. of cinchona with tr. ignatiæ or tr. nucis vomicæ for a number of months, and uses opium by suppository whenever required to allay pain.

This is evidently a marked case of what Mr. Walter Whitehead has described as mucous disease of the bowel, and Prof. J. M. Da Costa in 1871, as membranous enteritis.¹ Other writers speak of it as "painful affection of the intestinal canal," "pseudo-membranous enteritis," "follicular enteritis," etc. Prof. Da Costa, analyzing a number of cases, deducts as symptomatic of this disease, certain nervous disorders, as hysteria, headache, impairment of memory and sensation, disorder of the special senses, hypo-

¹ See Nos. of this Journal for July, 1871, p. 189, and October, 1871, p. 321.

chondriasis, increased mental activity during attacks, and irritability. Also high-coloured urine, uterine function often irregular, dyspepsia, marked and persistent abdominal pain, the characteristic discharge from the bowel. This case, it will be seen, presents nearly all of these symptoms, with the addition of a number of others. There is a long history of nervous disorder, a peculiar skin disease, derangement of the sense of sight, irregular uterine function, dyspepsia, high-coloured urine, intestinal disorder terminating in distinct attacks of pain accompanied by the characteristic discharges from the bowel, the pain finally coming on at regular intervals, preceded by chilliness, aching of the extremities, soreness of the mouth or eyes, and relief with the appearance of the discharge. There was also increased mental activity, and a severe hemorrhage. The amount of matter discharged was marked and persistent. Of the remedies employed, little or nothing can be said in favour of any of them.

ART. VII.—*On External Diaphoretics, particularly the "Wet Pack," in Eclampsia connected with Albuminuria.* By ISAAC G. PORTER, M.D., of New London, Conn.

It is now nearly thirty years since albuminuria, as connected with puerperal convulsions, began to engage the attention of the medical profession. Blackhall, it is true, as early as 1818, referred to a case of pregnancy, where the urine was coagulable by heat and nitric acid; but it was only a single observation, and succeeded by no broad generalization, as regards anasarca in pregnancy. Nearly ten years subsequently, Dr. Richard Bright laid the profession and the world under lasting obligations by his researches into nephritic affections, and particularly acute and chronic desquamative nephritis. Both of these affections, as all know, are attended by albuminous urine, the former, however, being chiefly functional, involving much less danger than the latter, which is more or less organic. This pathological fact led very naturally to an examination of the urine in puerperal anasarca, and the field was faithfully cultivated by Drs. Lever of London, Simpson of Edinburgh, Rayer, and others, and resulted in the discovery of an intimate relation between albumen in the urine, and coma and convulsions and such nervous affections in pregnancy as neuralgia, amaurosis, deafness, obstinate vomiting, puerperal paralysis, and puerperal insanity. So far as recovery from albuminuria in pregnancy is concerned, it may be said to resemble acute Bright's disease, rather than the chronic form, provided life is not sacrificed at or near parturition.

It may be sufficiently noteworthy to add, in this connection, that, as

an important surgical operation, or pneumonia, or any other severe intercurrent affection, occurring during the existence of chronic Bright's disease, is more liable to prove fatal, than under other circumstances, so when any accident complicates labour (*e.g.* a moderate *post-partum* hemorrhage), in the weakened state attendant on severe puerperal albuminuria, the patient sometimes unexpectedly succumbs.

But the question may arise: "What is the etiology of eclampsia as connected with albumen?" Some have supposed that the blood, partially divested, through faulty action of the kidneys of this important ingredient, ceases adequately to support and nourish the nervous centres; hence there is increased polarity of the cerebro-spinal system, with unnatural sensitiveness to anything excito-motory, such as the throes of parturition, the introduction of the hand in delivering the placenta, indigestible food in the stomach, a loaded rectum, or fright. Each of these are, doubtless, exciting causes; but it is generally conceded, that the remote cause cannot be referred to the paucity of albumen in the blood, or, I need scarcely add, its presence in the urine.

2d. A second theory is this: that the convulsion is owing to acute œdema of the brain, the exciting causes being a compound of that excessive hyperæmia or hydræmia, often found in albuminuria and the violence of labour; the exudation of serum compressing the vessels of the brain, thereby producing, as the case may be (according to Traube), either coma or convulsions, according as the pressure is exerted on the cerebrum, or the mesocephalon. This theory seems scarcely tenable, since these conditions often meet in labour without the resultant convulsion.

3d. In similar conditions of the circulating fluid, others believe that the eclampsia is owing to pressure on the brain from arterial stress and strain, incident to tedious or violent labour. Probably, however, if a convulsion occur, it is referable more to the morbid condition of the blood than the influence of labour.

4th. But the theory which is best sustained by clinical experience is that of toxæmia; uræmia having resulted from the retention of organic compounds in the blood, through diseased action of the kidneys, while albumen, through the same faulty condition, escapes; or, as claimed by Frerichs and others, the urea is chemically converted into carb. ammon., which thus becomes really the noxious agent. It may be doubted whether this change occurs, since benzoic and tartaric acids and lemonade drunk freely, with vinegar baths externally, a course of treatment which he recommends as neutralizing the carb. ammon., have failed in practice. Hence it remains that, whether the toxic agent be urea or carb. ammon., both, alike, must be eliminated by purgatives, diuretics, or diaphoretics.¹

¹ For able and exhaustive history of the connection between albuminuria and eclampsia, the reader is referred to the No. of this Journal for April, 1871, p. 442 et seq. On the 444th page the writer of the article referred to says: "Prof. Braun

This preliminary sketch of modern scientific views respecting the main cause of eclampsia, seemed necessary, the better to understand the operation of external diaphoretics, as in the following and similar cases.

Dec. 19, 1872. A married lady, æt. 19, seven months advanced in pregnancy, was attacked with convulsions at 5 P. M., following each other at short intervals. The day was cold and damp, and she had just returned from a long walk. For two months she had been quite anasarcaous; bowels constipated; with headache at night and when lying down. Dr. F. N. Braman of this city was sent for, but being absent, did not arrive until 9 o'clock P. M. An examination revealed the cervix uteri hard, conical, undeveloped, and the os closed, almost as in the virgin state, while there were no signs of labour. Four hours subsequently the writer saw her in consultation, and being requested by the parties, became associated in the subsequent treatment of the case, which then remained as above described: convulsions long and violent; patient, in the intervals, entirely unconscious. Bowels had been evacuated by castor oil and enemata and medium doses of chlor. hydrate had been administered. No urine had passed, but fortunately some was found under the bed which had been voided previous to her walk, and which had a specific gravity of 1.012 (thus affording the presumption that urea was retained *in the blood*), and contained so much albumen that it was nearly solidified by heat. It was not examined for casts. The doctor had already resorted to ether and chloroform to forestall the convulsions, and their use was resumed after my arrival. But as previously, they had to be relinquished, for while she struggled violently as inhalation was proceeding, with anæsthesia came difficult respiration, profound stertor, and a failing pulse, the latter previously having been quite weak. The face and person were much bloated, and as bleeding was inadmissible, the case was nearly desperate. The rigidly closed os and cervix uteri seemed to forbid forced labour, where no signs of it existed, whether attempted by the introduction of a sound to rupture the membranes, or tents, or Barnes's dilators, or the uterine douche. All were too tardy to meet the exigencies of the case.

Here I would interpolate a brief abstract of another case (as a sample of many) the memory of which influenced the subsequent treatment.

An elderly gentleman, with chronic Bright's disease, was subject to attacks of coma and convulsions whenever suddenly exposed to cold and damp air; and nothing so speedily relieved the symptoms as a forced sweat in bed, by means of a steam-bath, or more feasibly, by putting his feet (by bending his knees) into hot water beneath the bed-clothes and applying freely, hot bricks and bottles around the body.

of Vienna," referring to the coincidence of eclampsia and albuminuria, remarks, "that this has opened a new path to the knowledge of this most dangerous disease; so that the eclamptic convulsions of women during pregnancy must be considered to be identical with the fits of adults in general that are produced by uræmia in the course of Bright's disease;" and on p. 450 he adds: "Prof. Braun's view that eclampsia parturientium is commonly the result of uræmic intoxication arising from Bright's disease of the kidneys, produced mostly by carbonate of ammonia in the blood, perhaps also extractive matters in the urine," is purely hypothetical.

The writer of this note feels incompetent, in view of the evidence, to decide the important point in controversy; but, if err he must, he prefers to do so with Braun and the great mass of medical opinion and authority in the world.

Dec. 20, 8 A. M. The patient had now experienced about thirty convulsions, when it was noticed that her skin had become slightly moist, as if nature were making an effort to expel the poison, and there was a slightly lengthened interval between the attacks. We immediately placed her in a hot "wet pack." A few straps, or cords were first placed on a bed, then thick woollen blankets, and on these a folded sheet, wrung out of water as hot as could be borne. On this the patient, previously divested of clothing, was placed and rolled up in the blankets, and as she was not in labour, the lower extremities were not packed separately, as might be done when the case demanded it. Hot, rather than cold water was used, for fear of checking, by the shock, any incipient perspiration. In the robust, with antonic condition and hot and dry skin, the "cold pack" would doubtless be preferable. We also placed a hot mustard poultice over the loins; but this was soon removed, as a motion of the head from side to side, showed existing discomfort, and we feared lest the irritation should result in unhappy reflex action. Shortly after completing our preparations, she had a recurrence of spasms, but soon became universally wet with perspiration offensive, if not urinous, in odour, and passed within an hour into a tranquil sleep, and had but one more convulsion, which was the thirty-second. She remained carefully "packed" five hours, and moderate diaphoresis by milder means was continued through the following night, during which time her thirst was intense, although freely gratified with cream of tartar water, spts. of nitrous ether and water, and nourishing drinks. During the "pack," cold was applied to the head and ten grains of calomel placed upon the tongue, and when able to swallow, one drop of croton oil and 3j castor oil were administered three times, at one hour's interval, which operated freely. A cough, followed by frequent vomiting, occurred, which doubtless tended still further to depurate the system of urea and ultimately yielding to medium doses of brom. potass., natural sleep following.

Dec. 21, 5 P. M. Labour-pains now appeared, and the delivery was completed at 2 A. M. of the 22d inst., under the charge of Dr. Braman. It was natural, required nothing but gentle manual assistance, and was attended by no convulsions; child dead. The urine during the preceding day was liberal in quantity, and after cooling, was nearly the colour of milk; chemical tests showing that it was four-fifths albumen. Under the judicious treatment of the same medical gentleman, she made a slow but satisfactory recovery. Traces of albumen, however, existed as late as April 2d. It may be added, that, for a period of sixty-eight hours from the outset of the attack, there was no intelligent consciousness.

As points of interest in the foregoing case, the writer would refer to the following:—

1st. The desperate condition of the patient when external diaphoresis was resorted to; os and cervix uteri rigidly closed; no signs of labour and its normal period remote; therapeutic means of acknowledged power resorted to and found fruitless, and others (often of great efficacy) inappropriate and hence out of the question. Query, Is ether or chloroform ever proper, in continuity, where there are no signs of labour, and the expectation of delivery entirely indefinite? In this case it had no influence in quieting inordinate nervous irritability. A number of cases, which the writer supposes were of this description, have come to his knowledge where

primiparæ, suffering from anasarca, have fallen (one in her garden) in convulsions, having checked perspiration in cold and damp weather, and have died without signs of labour. What more appropriate, than to treat such cases as if they were Bright's disease in the male? taking care to eliminate the urea and leaving the complications to nature.

2d. The "wet pack" is not inconsistent with the simultaneous use of other active medication. Bleeding may be practised when called for, as in any other disease; cupping the loins may precede to relieve hyperæmia of the kidneys; we may apply cold to the head, or administer hypodermic injections of morphia, or enemas of chloral hydrate, or, if the patient can swallow, we may give bromid. potass. or tart. antimon.

The importance and efficacy of external medication in eclampsia, in the form of diaphoretics, are ably set forth in an interesting article, by Jaquet of Berlin, translated and published in a recent number of the *Philadelphia Medical Times*,¹ to which reference is made for additional details and arguments. If seen prior to the occurrence of this case, I had forgotten it; as shown by the late hour at which the remedy was resorted to. Jaquet had used the "wet pack" in eight cases, at the time of writing, with satisfactory results.

My object will have been attained, if I have brought prominently forward a remedy in puerperal convulsions, not entirely novel, yet one too much neglected and overlooked, and valuable, doubtless, in all cases attended by albuminuria. Where labour is nearly completed, we may not care to resort to it, but it is eminently useful when other means are exhausted, or are inappropriate to the case.

A single clinical observation, standing alone, is often of little importance, and yet, it may call attention to a principle, whose truthfulness future experience shall authenticate and establish.

ART. VIII.—*The Influence of Rest in Locomotor Ataxia.* By S. WEIR MITCHELL, M.D.

MANY years ago I attended a gentleman who had locomotor ataxia which came on with a terrible suddenness in the form of a neuralgia of the lower limbs. It arose, as he believed, from having bathed in the sea when chilled. The first attack was described as agonizing. It lasted two days only, and was followed, after a few weeks, by a second. Thenceforward they grew frequent, and at length no day passed without some hours of such torment as I have never seen equalled in ataxic neuralgia. The ataxic symptoms were more slowly developed, and did not at any time extend to the upper limbs. Ten years after the first attack of pain, he fell when

¹ September 2d, 1872.

getting out of a street car, and ruptured the internal lateral ligaments of the right knee. Owing to this accident he was forced to remain in bed three months. During this period the pain became less severe and less frequent, until it finally ceased. When he got about again the pain did not return, and during several years there was no renewal of it, nor, as I have since learned, did it ever again annoy him. It was also remarked that the ataxic symptoms, which hitherto had advanced slowly, progressed no further, and remained unaltered until his death, several years after, from acute disease of the lungs. I regarded this case for a time as a curious medical incident, and though presuming that the check in its progress might have been such an one as we often see in this disorder, I nevertheless kept it in mind.

Five years ago, a patient *æt.* 47, who had well-developed ataxial troubles with continuance throughout of the neuralgia, broke his leg. The long enforced rest which followed entirely stopped the pain, which has never come back. The ataxial symptoms have increased but very slowly; I am not confident that their rate of advance was altered, but I am certain the pain was quite abruptly ended.

The third example did not occur in the person of one of my own patients, but all the facts are well known to me. In this case the patient broke his thigh, and, soon after getting about, broke his leg. The prolonged rest thus necessitated terminated the neuralgia, previously severe, and seems up to this date (four years later) to have arrested the march of the disease, said to have been before that quite rapid.

A fourth instance was related to me recently. Here also the left leg was broken, and the neuralgia ceasing did not recur, although, as to the ataxial symptoms, I can learn nothing.

There is now in the infirmary for nervous disease attached to the Orthopædic Hospital in Philadelphia, a woman, *æt.* 48, who has ataxia with frequent, almost daily, spells of very painful neuralgia. A few weeks ago she broke her left thigh and, being at once put to bed, has had since then but a single attack of pain.

In one of the male wards of the same hospital is a bad and very painful case of ataxia in the early stage. To test the correctness of my belief as to the value of absolute rest in relieving ataxial neuralgia, I have kept him several weeks in bed, no medicine having been given until very lately. The result as to control of the pain has most surely been very remarkable. Before going to bed he could not walk without aid, nor could he stand for even a moment with closed eyes. The pain was inconstant, but never left him two days without extreme torment. Six weeks of almost absolute rest enable him to stand a few moments with shut eyes, to walk unaided up and down the room, and to assure me of his entire freedom from pain since the seventh day in bed.

I do not think these cases can be looked upon as mere coincidences of

pain ceasing about the time of the injury; I should rather conclude that exercise has power to flush the ganglia used in movement just as thinking brings blood to the brain and raises its temperature, and that this afflux of blood, or at all events the mere functional activity, is in some way injurious and irritating to the diseased centres. This will seem at least a reasonable view if we recall the influence of motion upon certain facial neuralgias. Even where there is no tender point, talking or chewing will often cause increase of pain, or awaken pain afresh. Thus I have lately seen a case of frightful torment in the upper jaw, which was due to acid dyspepsia, and was cured when this state was relieved. The stomachal condition had created, however, a state of the nerve centres of the fifth nerve of such a character that if the patient attempted to talk or laugh it presently resulted in a severe fit of pain, nor is this a very rare or merely curious example. Considering the spinal posterior ganglia and columns as in ataxia ready to pass into the state which gives rise to pain, it seems likely enough that exercise may be efficient in bringing it on. Exercise does not only mean motion in a physiological view of its totality of results, but it also involves the passage centripetally of a host of impressions generated in the moving tissues, and of necessity passing through the central sensory ganglia, and their related parts. The centres of motion and of sensation are, therefore, active during movement, and are then alike excited, so that we may with these facts in view see why motion may excite sensory organs.

It seems, then, that in the painful stage of locomotor ataxia motion is probably injurious, and that rest in bed is for like reasons useful. Time alone with future experience can be relied upon to determine how general may be the value of some such mode of treatment of ataxia and ataxial pain, and how permanent may prove to be the result. I am perfectly well assured in my own belief that rest will prove to be the best treatment for the early stages of ataxia, but if I were even less secure in my opinion I should not hesitate to speak of it as a possible mode of relief, since so little of value has been offered in the way of cure, or even of partial relief, in this long and distressing malady.

It naturally occurs to ask why so many ataxics have chanced to break limbs, and as to this I should answer first that no people are so awkward or fall so much, and next, that in some of the cases, it seemed to me that the habitual abruptness of the muscular acts had a share in the calamity, and that I have suspected, what has not yet been proved, that the bones in ataxics may suffer some impairment of their nutrition, and hence of their strength. Such was the case in Dr. Pennock's case, reported by Dr. C. Morris, where the lesion was sclerosis of the antero-lateral columns of the cord. But this is as yet purely speculative, however full of interest, and what I want to set forward prominently is that I have seen rest cure the neuralgia of posterior spinal sclerosis, and apparently in some cases arrest the disease.

ART. IX.—*Progressive Locomotor Ataxia, treated by Hypodermic Injection of Strychnia.* By W. B. DRINKARD, M.D., Professor of Anatomy in the National Medical College; one of the Surgeons to the Children's Hospital, Washington, D. C.

THE subject of the present case was a gentleman aged 50, who was brought to my notice as presenting an example of a somewhat rare ocular affection—double external strabismus. When I visited him on the 20th of April, 1872, I found him in the following condition: Paralysis of both nerves of the third pair; complete ptosis on the right side, partial on the left; both eyes in extreme abduction, right nearly immovable, and drawn a little down as well as outwards; pupils somewhat dilated, paresis of accommodation apparently slight. (The equivalent of vision was not ascertained, having no scale of test-types with me at the time); the patient habitually used a biconvex lens of medium power, so fixed on a handle that he could easily adapt it to the left eye in its abducted position.

Ophthalmoscopic Examination.—Optic papilla in *left eye* paler than normal; arteries somewhat reduced in bulk; reverse condition, *i. e.*, that of slight hyperæmia of the disk, in the *right eye* (the one affected with complete ptosis). Refractive media clear.

Head fixed in one position, being carried very much to the right side, so as to use the left eye—the only one employed in vision. Speech perfect; patient thinks there is occasionally some sluggishness in the action of the tongue—which, however, is not perceptible to others. Hearing as good as it ever was. His arms are more or less useless to him, unless objects held in the hand are *seen*; can grasp a hand firmly, or carry a glass to the lips if it be fixed by the left eye; lets the hand go, or the glass fall, if that eye be closed. Sensibility is less perfect over right than left arm. Legs can kick vigorously, and support him perfectly; gait good, though hesitating, with eyes open; “shuffles” a little, and walks with a certain amount of hurry, or precipitancy; his walk is “titubating” in a marked degree when the part walked over is not fixed by the eye. Describes his sensation in walking “as if the bottom of his foot were a flat shingle.”

More or less constipation; constant incontinence of urine; of late, there has been complete loss of virile power. Suffers from acute neuralgic pains through the extremities, recurring at least every six hours, unless he keeps himself under the influence of morphia—gr. $\frac{1}{4}$, hypodermically, four times a day. (This was the quantity I was induced to believe that he was using, from his calculation of the strength of the solution employed). Morphia does not produce drowsiness or other perceptible effect, beyond subduing the pain, and, perhaps, adding in a measure to the constipation. Appetite tolerably good. Digestion unattended with any special discomfort.

History.—His life has been one of active business; during the war, he was much exposed for some months as a scout. At one time a dealer in hides, he was exposed to arsenical exhalations, but never, to his knowledge, to the influence of lead. Underwent exposure to malaria in 1867, on the White River. Soon after, he was suddenly taken with ptosis of the right eye, accompanied with external strabismus. A like paralysis made its appearance in the left eye in the course of the following year. Some loss of virile power had already been noticed, with diminution of

muscular power, and pain in the right arm. Then followed obstinate constipation, incontinence of urine, diminution of power in left arm and in legs; the pain meanwhile increasing. About this time, the patient consulted a well-known ophthalmologist of New York, who prescribed strychnia, which was taken before meals, and producing systemic effects too decided to be pleasant, was discontinued. He afterwards consulted a physician in Boston, who prescribed bromide of potassium; this was taken without perceptible effect. Then, at the suggestion of a friend, he took chloral, in large doses, but was forced to give it up also on account of its prostrating effects. A year ago, he had an erysipelatous inflammation of the right foot; since recovery from this attack, he states that his appetite and digestion have been better, his constipation less. His family physician lately recommended strychnia, gr. $\frac{1}{32}$, three times daily; which I advised should be continued.

Progress of the Case.—May 17. The internal use of strychnia as above has been continued with good effect; improvement of appetite; diminution of cutaneous anæsthesia; general condition and feeling better. At this date, I commenced the hypodermic treatment, injecting at first gr. $\frac{1}{8}$ of the sulphate of strychnia daily into the temple. Almost invariably the patient remarked a flash of light before the eyes within the minute after the injection. Each one was followed by an increased perception of light, which the patient ascribed to a lessening of the ptosis, possibly, also due to the action of the drug on the retina.

24th. The patient's weight, to-day, is 110 $\frac{1}{2}$ lbs.; as compared with his former average weight of 160 lbs., a loss of 30 per. cent in about five years.

26th. Injection continued daily up to present time, producing continued increase of cutaneous sensibility, increased power of retaining urine (since three days, he has been able to retain it all night, and to void it naturally in the morning). Constipation lessening; increase of power of adduction in left eye; more natural feeling in the legs and more capability of walking without fatigue; pains in the arms somewhat diminished in intensity; they have almost entirely disappeared from the bladder. The doses of morphia are being gradually diminished in amount: he still takes them at the same intervals.

June 11. The dose of strychnia has been gradually increased up to gr. $\frac{1}{32}$, twice daily, without inconvenience, and with an increase of amelioration in symptoms as noted above. The patient left to-day for his home in New England.

A letter received after his departure—dated July 11th—states that “he has been almost entirely free from costiveness for the past two weeks. . . .

A very good appetite, and also improvement in the movement and sight of the eye; but, if anything, an increased numbness in his arms and limbs, with the usual attacks of pain every six or eight hours. He rests and sleeps better of nights than he did when in Washington.” During this interval of a month, he had been continuing the use of strychnia, sometimes by the mouth, but as a rule hypodermically. Later still, in the early fall, I received a letter from him, stating that he was about as before in other respects, but suffered a good deal from flatulency and was annoyed by marked swelling of the feet. I since learned that at the time of writing he had intermitted the use of the strychnia, and did not resume it until his return to Washington, where I first saw him again on the 1st of December. His feet and ankles were then very much swollen, and he

complained of almost constant flatulent distension, causing sometimes very severe pain. I observed no decided change in him in any other respect. Advised him to recommence the strychnia, internally at first, gr. $\frac{1}{32}$ three times daily. This relieved the flatulency altogether for awhile; afterwards returning, it yielded readily on the addition of carminatives. The œdema gradually decreased.

Sickness of other members of his family prevented me from giving him very close attention until towards the last week in December, when I began the hypodermic treatment again, at first gr. $\frac{1}{32}$ once daily, then the same quantity twice daily.

About this time, he became very much absorbed in an important and intricate piece of business, whose details he managed with a dexterity that showed how entirely unclouded his intellect was, but which evoked an amount of concentration and anxiety disastrous in their results. He had, at my suggestion, again begun to reduce the doses of morphia; but now he found himself driven to them again, as much from the imperious opium-appetite as from pain, I am inclined to think: although the pain must at times have been fearful.

1873, January 9, was called in haste to see him, and found Dr. C. M. Ford already in attendance. The pain this time had lasted from 7 o'clock, A. M., until 4 P. M., the hour at which, despairing of obtaining any relief from morphia, he had sent first for me and then for Dr. Ford. At 5, Dr. Ford and myself saw him together. The pains this time affected the legs; as a rule, they more frequently attacked the arms. The patient (a man of more than ordinary nerve and endurance, habituated for so long to these severe ataxic pains) was crying aloud in his agony: the spasms of pain recurring, apparently, every two or three minutes, contracting his limbs like a sudden cramp (to which he compared the sensation), and leaving him after half a minute or a minute; he being perfectly free of pain in the intervals. Dr. Ford suggested and tried compression of the sciatic nerve and its branches: this was not disagreeable to the patient, did not increase the pains, but had no perceptible effect in lessening them: and as soon as one limb was relieved, the other was attacked. He had had a hypodermic injection of morphia, just before Dr. Ford's arrival; we contented ourselves, therefore, with giving one of gr. $\frac{1}{3}$; and inasmuch as he complained very much of flatulency, referring to an uncomfortable sensation in his abdomen as the starting-point of each successive spasm of pain in the legs (and having been constipated for a day or two), we prescribed ℥j of Hoffman's anodyne, to be repeated in two hours if required, and directed an assafoetida enema to be given. Between 5 and 6 $\frac{1}{2}$, I had given him, in all, three hypodermic injections, respectively of gr. $\frac{1}{3}$, gr. $\frac{1}{3}$, and gr. $\frac{1}{2}$ of sulphate of morphia. The last dose quieted the pains, somewhat lessening their intensity and increasing the intervals between them.

This insusceptibility to morphia suggested investigation. Inquiry developed the fact, that he had been gradually increasing the amount taken, of late, until he was now using a solution of ℥j to ℥ij of water; of this he was now having administered to him injections of m_{xxv}—a little over 1 $\frac{1}{2}$ gr. of morphia. Of these he had taken at least 4 between 7 o'clock A. M., and 4 P. M., of this day; making with what I myself gave him afterwards more than 7 grs. of morphia taken hypodermically inside of twelve hours, without entire relief to the pain!

He was sufficiently relieved during the night to get some hours sleep. The pains recurred the next day at about the usual intervals, but without

the excessive violence of the day before. I pointed out to him and to his attendants the necessity of reducing the quantity and number of doses of morphia, gradually, but systematically; and this was done throughout the ensuing week, but without the reduction in quantity having been at the last carried below $\frac{1}{3}$ grain, or the intervals lengthened beyond four hours: stimulating and nourishing diet was at the same time directed.

January 13th, he had several copious stools—the ordinary *débâcle* of opium-eaters—and this emptying of the bowels continued the next day; each stool seeming to leave him more prostrated. He failed rapidly during these two days, and died quietly on the morning of the 15th, his mind being unobscured to the last, when not under the immediate effect of the paroxysms of pain.

No autopsy could be obtained. Without it, the case is of course incomplete, and adds nothing to our knowledge of the pathology of locomotor ataxia. In its clinical aspect, however, it is interesting, as presenting a typical example of the disease. The treatment, too, by strychnia administered hypodermically, is novel, I believe, inasmuch as, during nearly twelve months that have elapsed since I instituted it in this case, I have found no instance of its use recorded in similar conditions.

Ex uno, disce omnes, is not a locution often applicable in practical therapeutics, but from the foregoing facts of a single case, I think we may infer:—

1st. That strychnia offers at least as much chance of amelioration in locomotor ataxia as any other remedy that has yet been tried in this disease, and that its benefits may be more promptly and decidedly obtained by the hypodermic method than by its internal use. Moreover, the tolerance exhibited to the use of the drug, verified by my own experience and by the numerous recorded instances of its employment in ophthalmic practice, justify me in thinking that the amount thus given may be increased far beyond what I used in this case, gr. $\frac{1}{32}$ twice daily, and with proportionate increase of beneficial effect.

2d. That without denying to morphia, especially as administered hypodermically, its place as the sheet-anchor in this terrible disease, whose frightful and characteristic pains will yield to nothing else apparently, we must yet be even more on our guard in administering it than we usually are. For even if there be not a special tolerance of opium and of all sedatives and narcotics in locomotor ataxia, as there probably is of strychnia in this and other conditions of nervous tissue-change, the severity of the pain itself may increase its toleration, and encourage the continued use of larger and larger doses; until, finally, relief can only be obtained by an amount conceivably incompatible with life, or the patient sinks, killed as much by the drug as by the disease.

ART. X.—*Absorption of two inches of the Shaft of the Femur.*

By FRANK K. PADDOCK, M.D., of Pittsfield, Mass.

I AM induced to report the following case because it seems to establish the fact that there may be local osteitis, with absorption of the mineral portion of an entire section of a long bone, without the formation or deposition of any fibrinous or plastic material or other product of inflammation either in or adjacent to the diseased bone.

The patient was a lady aet. 59, the mother of four healthy children, to whom I was called Jan. 15th, 1872, on account of lameness in her left thigh. I found upon examination an exceedingly tender spot on the anterior portion of the left thigh about four inches below Poupart's ligament, about on a level with the lower angle of Scarpa's triangle. From this point radiated in all directions burning shooting pain of an excruciating character, but no swelling, redness, or increase of temperature in the part indicative of local inflammation; there was, however, extreme tenderness on the slightest pressure. In walking she was obliged to use two canes, although she could bear the weight of the body on this limb. The motions of the limb were unimpaired, except that she had no power to voluntarily carry the limb forward, viz., to flex the thigh on the body, or to rotate it; in walking she dragged this limb after the other. The temperature in the axilla was 101°, skin hot and dry, pulse 120, tongue somewhat coated, very little appetite, bowels inclined to be constipated, urine phosphatic, specific gravity 1025, and did not contain albumen. She was inclined to micturate every two or three hours. She was however daily dressed and about the house and took her meals with the family. At night she was very restless and slept very little, being kept awake by the constant pain in her thigh.

The previous history of the case was as follows: About four years before, she had quite a severe attack of nephritis attended with hæmaturia, from this she recovered except that afterward she was never able to retain her urine more than three hours at a time.

The lameness in the thigh she first noticed in June, seven months previous to my first visit. Her attention was first attracted by a disposition on the part of the left toe to strike any little elevation upon the surface upon which she was walking, like a threshold or board lying upon the sidewalk. She soon became conscious that the limb dragged a little and that she was very liable to trip unless extremely careful when walking. She also very soon discovered that she was losing the power of carrying the leg forward, of lifting the foot over any little obstacle in her path, or of going up stairs with that foot first. Not long after she first noticed these symptoms she began to experience pain and soreness in the thigh at the point previously mentioned. All these symptoms had gradually increased in severity up to the time of my first seeing her, when her limb could be moved in any direction without increasing the pain by grasping it quite firmly in the hands and moving it very slowly, but any quick or sudden movement caused her to complain bitterly. The limb was not shortened or swollen, nor was it either in appearance or to the touch in any way different from the other. She was confident that she had never

received any injury whatever even of the slightest character that could have affected the limb.

The pain and tenderness continued to increase in severity, and in two weeks after my first visit she was confined to her bed and unable to have the limb moved even in the most careful manner without suffering excruciating pain.

She became more and more debilitated; had no appetite, pulse became more feeble and more rapid. About two weeks before she died, I noticed one morning during my visit that the thigh was somewhat bent, and on lifting it up I found that there was a separation or fracture in the shaft of the femur at the point where she had suffered so much pain. The nurse stated that during the previous night she had felt something give way while lifting up her hips to place the bed-pan. After the femur had separated she failed more rapidly, and died March 28th, 1872.

Autopsy was made twelve hours after death. Very little rigor mortis—body considerably emaciated, although there was a thin subcutaneous layer of adipose.

She had one large white kidney containing several small abscesses; the other was very much contracted and also contained in the cortical portion one small abscess the size of a pea.

The other viscera were apparently in a normal condition. An incision was made in the thigh and the femur exposed from the trochanter major downward to the middle of the shaft. The tissues adjacent to the bone were in a perfectly normal state. There was not the least effusion of blood or extravasation of lymph either around the fractured ends of the bone or in the surrounding tissues, nor was there present the least indication of either old or recent inflammatory action. An entire section of the shaft of the femur two inches in length had disappeared, nothing remained of the original bone between the upper and lower fragment except a few shreds of periosteum and a soft fibrous substance containing a few small pieces or flakes of dead bone in its meshes. The ends of the bone were quite square, although they presented a rough and jagged appearance.

The periosteum was separated for about three-eighths of an inch from each end.

A section of the bone was removed embracing two inches of each end. At the point of separation with the saw the bone appeared healthy, there was, however, some congestion of the medulla.

No pus corpuscles were found, although a long search with the microscope was made.

This patient was a wealthy lady and belonged to one of the old New England families; her parents died at an advanced age. There was no evidence of any hereditary taint or disease. She was the mother of four healthy children, and was not aware of having received any local injury. The disease began and passed through its different stages without local increase of temperature, and without producing any swelling or redness. There was no indication of fatty degeneration of the bone. The prominent points in the case are excessive local pain, gradual loss of motion in the limb, absorption of a section of a long bone attended by constitutional disturbance, amounting finally to hectic fever and death.

ART. XI.—*Ovariectomy by Enucleation; Recovery.* Reported by SAMUEL LOGAN, M. D., Prof. of Anatomy and Clin. Surgery in University of Louisiana, and W. H. FORD, M. D., Professor of Physiology in New Orleans School of Medicine.

PROF. MINER'S plan of operating for ovarian tumour being still *sub judice*, it seems to be the duty of all who resort to that method to report their results, and under that conviction we record the following case, the early symptoms of which were developed under the immediate observation of Prof. Ford, in whose practice the case occurred.

Mrs. A. H. L., æt. 42; married; multipara; nervous and excitable, subject to hysterical paroxysms; has not menstruated since birth of last child, now 21 months old.

May 12, 1872. Has a tumour in hypogastric region as large as the uterus at four months' utero-gestation, ovoidal in shape, movable.

June 8th. Tumour increased in size until it now fills the abdominal cavity; everywhere tender on pressure, or even to the slightest touch. Dulness on percussion over abdomen; fluctuation in the neighbourhood of umbilicus. General contour of tumour clearly recognizable; vagina and cervix normal; uterus immovable in hollow of sacrum. No foetal heart sound, but a constant murmur closely simulating the placental souffle, most marked on left side.

9th. Patient in great distress, demanding relief; abdomen tense and extremely painful to touch; fluctuation perceptible over the whole abdomen. Pains, similar to those of labour, coming on every hour or two. The uterine sound could not be introduced more than $2\frac{1}{2}$ inches. Under diet, warm water douches in the vagina, stramonium poultices to abdomen, etc., the acute symptoms ceased after a few days.

The general fluctuation, the presence of bosselated enlargements on the sides of the pyriform mass, the rapid growth, and acute pains, determined the diagnosis in favour of cystic degeneration of the wall of the uterus, or of some of the annexes of that organ.

15th. Chloral at night; abdominal pains especially severe on turning in bed. Bowels regular; urine very scanty and high-coloured. Fever from time to time, but more in the last two days. Pain in the right iliac region. Appetite and digestion good.

25th. During last 48 hours has had a dribbling of clear watery fluid from vagina. Tapped in linea alba $1\frac{1}{2}$ inch below umbilicus, and $1\frac{1}{2}$ pint of glairy, flocculent, citrine fluid escaped during an hour; and as much more during the ensuing 36 hours, when the wound was closed with a bit of strap. Relief decided; very slight inflammation about the puncture. Ordered quinia and iron.

After this, patient was tapped seven times at intervals of from five weeks to six or eight days. The last tapping on October 10th. Fluids evacuated in all cases similar; citrine, glairy, and, towards the close of the tapping, almost puriform. Viscidity most marked in fluids obtained from the harder nodular masses of the left side of the body of the tumour. Punctures gave no trouble. The quantity of fluid drawn off at each tapping varied from three pints to two gallons. The puncture made in the last

tapping was intentionally kept open by the patient, in view of the relief from oppression, now very urgent, afforded even at the inconvenience of the constant discharge. Notwithstanding the escape of so much fluid, secretion was so rapid that enlargement continued. Puffiness under the eyes; legs and feet cedematous and cold; appetite fair; digestion imperfect; colicky pains; pulse 85. Girth through umbilicus, 34 inches; from pubis to ensiform cartilage, 15 inches.

Nov. 10, 1873. Ovariectomy having been decided on, it was performed this day by Prof. Logan, assisted by Prof. Ford, and by Drs. A. H. Cage, C. B. Galloway, and C. B. Galloway, Jr., of Canton, Mississippi. The patient having been put under the influence of chloroform, incision was made extending from the point at which the last tapping was performed, and from which the discharge was still issuing, about an inch below the umbilicus to the symphysis pubis. The opening into the peritoneal cavity was commenced below, and extended upwards, so as to be certain not to cut into the tumour, which there was every reason to believe was adherent round the orifice of the last tapping. As a rule, it is advisable to open below even when the above condition is not present. The interval between the peritoneum and the tumour is much more easily found below, where the abdominal walls are reflected from the margin of the tumour to the pubes, than above, where tumour and abdominal walls are closely applied. When the peritoneum was slit open the expected adhesions were found to exist, but they were easily torn loose. Spencer Wells's large hollow trocar and canula, with gutta-percha tube attached, was then plunged into the tumour through the fistula; but so very much softened had the adjacent portions of the cyst-wall become, that it tore like wet paper, permitting the glairy and semi-purulent fluid to flow over the tumour. This complication was promptly met, however, by pressure applied to the lateral abdominal walls covering the tumour, which effectually guided the wave of fluid through the lips of the wound. By this prompt action but little of the escaping fluid entered the cavity of the peritoneum. Most of the cystic contents were evacuated in this way. An immense quantity was thus expressed, most of the other large cysts seeming to communicate with this opening. Indeed, at the last tapping a long canula and trocar had been used and projected in several directions, with the view of effecting just such a communication in order to make the tapping the more effective. After the fluid ceased to flow the usual exploration was made, and the tumour was found tightly and extensively adherent to the abdominal walls on each side. The mass was still so large that it became at once evident that an extension of the incision in the abdominal walls would be required. The incision was, therefore, at once continued upwards and around the umbilicus to about two inches above that point. It was then found that there was also one point of adhesion to the omentum. This was easily separated, and so were the far more extensive lateral connections already mentioned. In performing this part of the operation, particular care was taken to effect the separation at the expense of the cyst-wall, rather than the normal tissues; and the separation was effected with much less trouble than had been anticipated. The tumour was then turned out of the abdomen, and found to be connected with the right broad ligament, by means of a pedicle about two inches broad and about three-quarters of an inch thick. It was quite long enough for clamping, and one of Mr. Spencer Wells's clamps was provided, in case enucleation, which had been determined on, was found inadvisable. Insinuating the index finger through

the middle of the pedicle where it joined the tumour, the operator succeeded with perfect ease in carefully peeling each portion with its vessels from the surface of the former, and in a very short time the whole mass was everted without the loss of half a drachm of blood, and the shreddy pedicle was dropped back into the abdomen. There was some little hemorrhage during the operation, but it was mostly venous and from the abdominal walls, the veins in that position having been considerably distended, probably from the pressure of the tumour on the ascending cava. What fluid and blood had settled into the pelvic and abdominal cavity were carefully sponged out. The womb, the remaining ovary, and the other parts were examined and found perfectly healthy; and the wound was closed by silk sutures extending through all the thickness of the abdominal parietes. The line of incision was then glued up with Richardson's colloid styptic; the abdominal walls were supported with long strips of adhesive plaster running across the wound, and extending well round the flanks, and the line of incision was covered with a piece of lint soaked in carbolic oil (1 part carbolic acid to seven of olive oil).

The patient was then conveyed from the operating table and placed on her back in bed.

She recovered readily from the chloroform, and did not seem to suffer any marked degree of surgical shock. Pulse, one hour after the operation, 120; skin almost normal; mental condition natural.

Tumour weighed, after evacuation of fluid, 16 lbs.; estimated weight of fluid lost during operation, say 8 lbs.; total estimated weight, 24 lbs. Examination by microscope and otherwise shows usual structure of the multilocular ovarian tumour.

The patient progressed favourably. On the tenth day the stitches were removed; union firm along the whole line of incision, except at one point, where a little suppurative action had occurred. An alum wash reduced this in a day or two. An abdominal waistcoat was applied to support the line of adhesion.

Dec. 1st. Progress very rapid and uncomplicated; patient sat up on the thirteenth day in bed, and was about her room on the eighteenth day. Afterwards continued to improve on cod-liver oil, quinia, and iron. A dull pain in the lower abdomen, felt after the operation, disappeared by degrees. She fattened remarkably, and on the fortieth day menstruated.

At the present writing, more than four months since the removal of the tumour, she is in perfect health.

ART. XII.—*Description of an Intra-uterine Medicator and Uterine Insufflator.* By H. CULBERTSON, M.D., Assistant Surgeon U. S. A. Retired. (With 2 wood-cuts.)

IN February, 1871, I presented to the Muskingum County Medical Society the following described instrument, which has been useful in my hands and may aid others in the treatment of diseases which require intra-uterine medication.

The instrument is composed of a small syringe, accurately fitted to a

gold or pure silver tube, *AB* Fig. 1, five inches in length, enlarged at its proximal end, to receive the point of the syringe. The internal diameter of this tube is one-sixteenth of an inch, or may be less if desired. Its walls are thin. The distal end *B* is open and rounded so as not to cut. *ED* is a portion of No. 1. French rubber tubing about one inch in length, the distal end of which is ligatured at *D*, and the tubing placed on the silver-tube, and secured to it at *E*, with a fine silk thread. Four longitudinal rows of very small perforations are made upon the sides with the finest cambric needle, taking care to avoid the seam of the tubing, and to perforate the rubber obliquely in the direction of the line represented at *F*. The metal tube can be bent to any curve desired.

Fig. 1.



The following is the manner of using the instrument. Having filled the syringe with the warm medicated fluid, and attached the tube to it, the piston is pushed down until the fluid distends the tubing and appears upon the surface of the rubber—notice the force applied to the piston in the act. Taking the finger from off the piston the rubber will return to contact with the silver tube; wipe off the fluid from the surface of the rubber, oil the latter, hold the body of the syringe (do not touch the piston now) pass the distal (rubber) end of the instrument into the cavity of the uterus, press the piston down gently, and move the now slightly distended tubing over the endometrium. When the application has been completed, remove the finger from the piston, the rubber will again come in contact with the metal tube and the instrument can be readily withdrawn. Finally, detach the silver tube from, and empty the syringe and fill it with water, re-attach the tube to the syringe and wash the tube and rubber clean for future use. It will be found that but little fluid has been consumed in the application.

We claim for this instrument the following advantages:—

1. It is not expensive.
2. So little fluid is thrown into the uterus (and this is so spread over the surface of the rubber, thus gaining the greatest benefit from the smallest quantity of the medicated agent) that the danger of intra-uterine applications is greatly diminished by the use of the instrument.
3. The rubber tubing expands and allows the medicated fluid to be applied to the inequalities of the uterus.
4. Should any jet be projected, the direction will be towards the mouth of the uterus (the tubing should not be perforated on the distal end), and hence the danger of the fluid passing into the Fallopian tubes is diminished.

5. The bulk of the tubing is so small that it is scarcely ever necessary to employ a tent before using the instrument.

We have used iodine and carbolic acid and glycerine and other medicines by the aid of this instrument without any unfavourable symptoms. In the employment of these agents it has not been necessary to apply a new rubber often, although it may be requisite to re-perforate the tubing.

The tubing is about one-eighth of an inch in diameter and may be procured of Samuel S. White, Twelfth and Chestnut Streets, Philadelphia, Pa. The instrument could be improvised with the tubing and a small catheter, and with a small bougie (end cut off and waxed), we have employed the invention, successfully, in the treatment of gonorrhœa.

In the latter disease the urethra is distended and all its folds are thus medicated.

Uterine Insufflator.—June 1, 1871, we presented to the Muskingum County Medical Society, the following described instrument, which consists

Fig. 2.



of the rubber balls and tubes which form a part of Richardson's spray-apparatus, the tube being attached at *A*, Fig. 2. The appliance further consists of a wide-mouthed, half or one ounce vial, to which is fitted a cork, perforated with two silver tubes, *A*, reaching to near the bottom of the vial, and *B*, eight inches in length, and merely passing through the cork. Both tubes are throughout three-sixteenths of an inch in diameter, and securely cemented in the cork. The powder (fine) is to be placed in the vial. On forcing

the air, by the aid of the Richardson bulbs, through the tube *A*, the powder is caused to pass along and out of the tube *B*, and thus reaches the diseased surface. We have used this apparatus often, successfully, employing various powders, as pulv. plumbi acetat, tannic acid, etc., either in the uterus or vagina. We have also used it with good results in hemorrhage of the rectum from sloughing.

Should the ends of the tubes *B* or *A* become obstructed, a hair-pin will soon remove the plug. It has not become clogged in my hands in intra-uterine or vaginal insufflation.

ZANESVILLE, O., April 16, 1873.

ART. XIII.—*Amputation through the Knee-joint.* By G. ERICKSON, M.D., of Kendallville, Indiana.

MAY 8, 1872, A. G., railroad employé, æt. 22, of good health and habits, had his right leg crushed by a railroad car-wheel. In falling he struck his side against a pile of railroad iron, injuring him internally at the same time. It was two hours before I saw him, when he was suffering severely from shock, the combined effects of the direct injury, and subsequent loss of blood, which had been great.

It was sixteen hours before reaction was sufficiently established to warrant amputation.

The knee-joint was found to be the lowest practicable point to amputate. A long anterior and a short posterior flap were made, the patella brought down between the condyles of the femur, and after all oozing of blood had ceased the wound was closed in the usual way. For a week he continued weak and prostrated with a severe pain in his side, which troubled him more than his leg. On May 10th pleurisy supervened from the injury in falling on the railroad iron. On May 15th he had a chill, with very severe pain in the stump, with a thin fetid sanguineous discharge, and a gray indolent appearance of the wound. Pain in his side, and cough very much increased at the same time.

Pulse for the next ten days ranged from 125 to 145 beats per minute, and feeble. At the end of the third week he began gradually to convalesce, but there was still some subacute pleurisy with effusion within the pleural cavity, which afterwards was entirely absorbed. At the end of two months the wound was entirely healed, with an excellent stump, the patella being firmly adherent to the condyles of the femur, where it had been placed.

The internal injuries not only delayed the healing of stump, but came very near producing a fatal result. He has been wearing an artificial limb for the last five months, the stump remaining in a good condition. The constitutional treatment consisted of stimulants and a nutritous diet in as great quantities as he could digest. When the chill occurred, and he showed symptoms of pyæmia, large doses of quinia were given every two hours during the first day after the chill, as an anti-suppurative, as recommended by Billroth and others, and then gradually diminished. Thorough ventilation and cleanness were rigidly enforced, no cloths were allowed to be applied to the stump the second time until thoroughly washed in carbolic acid water, and well aired. The local treatment was water-dressing, at a temperature ranging from 55° to 60° Fah., which was the most agreeable to the patient. On the 15th, when the wound assumed a gangrenous condition, the stump was wrapped in cloths saturated with turpentine, and continued on for six hours, with the effect of arresting the sloughing. Afterwards it was applied by sponging the wound with it three or four times a day for a week, when the wound assumed a healthy condition.

The turpentine was very prompt in arresting the sloughing, diminishing the pain, and giving the wound a more healthy appearance. At no time did it produce any disagreeable feeling to the patient.

The sloughing occurred principally on the inner side of the stump, but was nearly filled up by granulations so as to leave a good protection to the bone. The ends of the flaps united firmly, leaving but a very small

ciatrix, so far back that it will be entirely out of the way of the pressure of an artificial limb.

It remained perfectly sound to December, when I last saw it. In answer to my inquiry in regard to the patient's condition, the following note dated May 16th received from him may be of interest as giving the satisfactory result in his own language.

"*Dear Sir* :—I commenced to attend the railroad target on Sept. 1, 1872, and have continued to do so up to the present time. The stump has remained healed and sound since it first healed up in July last, and has given me no trouble since whatever.

"On Jan. 17th, 1873, I commenced to wear an artificial limb and have worn it every day since, being able to walk without cane or crutch. I have not lost an hour's time, since I commenced work last Sept., on account of the stump."

ART. XIV.—*On the Oxytocic Properties of Quinia.* By S. HIRAM PLUMB, M.D., of Red Creek, N. Y.

As there has been considerable discussion recently in the medical journals in regard to the question whether quinia possesses oxytocic properties, I am induced to contribute my mite towards its solution. So far as it has come under my notice, the argument thus far amounts to this: One asserts positively, "I have given quinia in cases of lingering labour with a view to oxytocic results, and have obtained them; therefore quinia must and does possess such properties." Another replies negatively, "I have practised medicine in a malarious section of country for many years, and have given a great deal of quinia to pregnant women without producing abortions or premature labour, and therefore quinia cannot and does not act as an oxytocic."

Now the first step towards a solution of this question, as in so many others, is to clearly understand the meaning of the terms employed. An oxytocic is defined to be "a medicine which promotes delivery," not as a medicine which *induces* delivery. Between inducing the parturient effort in a gravid uterus quietly carrying its burden through its appointed term, and promoting that effort when the term has been completed or disturbed, there is a wide difference; in the one instance the normal function of the womb is passively to retain and nourish; in the other actively to contract and expel. Medicine, the effect of which would be as a *tonic* to brace and sustain the system in a normal, healthy condition of vital action, would not *induce* labour, but would *promote* delivery.

Without doubt ergot is generally regarded as the standard or representative oxytocic. And what are the facts in regard to ergot? Simply this, that given in labour it has the power to so augment the uterine contraction as to hasten the process; in other words, to "promote delivery." And thus when judiciously employed it not only saves valuable time to the attending physician, and hours of needlessly prolonged suffering to the

patient, but may save an unborn infant from threatened death from suffocation, or a mother from a death impending through exhaustion, or flooding. This result we obtain from ergot, given under such conditions, with probably as great a degree of certainty as we get the peculiar and desired effect of any other active medicine when appropriately administered.

But ergot by no means possesses an equal power of originating or inducing parturition; and fortunate is it for the human race that such is the fact. Other uses and effects of ergot need not enter into this question. Suffice that it has such, and at this day it would not be regarded as good logic to say, that, because it subserves other purposes, and when administered for these does not first inevitably empty the womb, therefore it is not an oxytocic. Neither, I submit, is it logical to argue, that, because quinia can safely be given to patients in the gravid state, therefore it has no oxytocic properties.

For more than 25 years I have practised medicine in a malarious district, and have very often administered quinia to women in pregnancy without any ill results; in fact I more fear that a continuance of chills and fever would provoke abortion or premature labour, than that the quinia required to arrest the chills would do so. For more than 15 years I have also given quinia as an oxytocic, commencing to use it in cases of labour in patients enfeebled by malarial disease; and, finding that it not only sustained the patient, but *seemed* to promote delivery, continued the practice until fully convinced that it *did* promote delivery, and then gave it for that purpose alone in cases of lingering labour, in patients not depressed by malaria. One such case permit me to recite:—

February 26th, 1869, I was called four miles from town to attend a lady in her third confinement, and who had been similarly my patient in her former labours, the first of which was severe and the second easy. A few minutes after my arrival at the house, under a slight pain she had a copious gush of blood; making an immediate examination, I found myself confronted by “*placenta prævia*.” Having nothing more reliable at hand, I administered at once about three grains of quinia, and sent a messenger to my office for ergot and my instruments. The womb responded promptly to the quinia and manipulation; there was but little more hemorrhage, and before the return of the messenger the labour was so far advanced and the contraction so firm that she was promptly and safely delivered without the use of ergot or instruments. The child was so exsanguinated that it gave only a few feeble gasps, and all efforts to resuscitate it were unavailing; the mother’s recovery was good.

I think, under quinia, the labour pains preserve their natural intermittent character, and do not become a constant pressure, as under the influence of ergot.

I now administer quinia in my practice as an oxytocic probably quite as often as ergot, and with nearly the same certainty of its fulfilling that condition.

RED CREEK, May 16th, 1873.

No. CXXXI.—JULY 1873.

TRANSACTIONS OF SOCIETIES.

ART. XV.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1873. Jan. 15. *A case of Foreign Body imbedded in the thigh four years and nine months.*—Dr. SAMUEL ASHHURST read the following report of a case of this :—

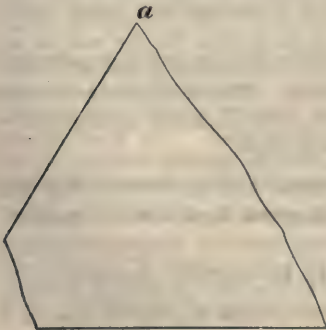
On the 22d of October, 1872, G. W., aged 25 years, of good previous health and habits, presented himself to my notice at the Episcopal Hospital with a small indolent ulcer immediately beneath Poupart's ligament of the left side, exactly in the fold of the groin, within three-quarters of an inch of the spine of the pubis. Its appearance gave the impression at once that it was caused by a foreign body, and upon introducing a probe it came in contact with what appeared to be a sharp edge of bone, which, upon further examination, could be felt distending the skin for nearly an inch below the ulcerated point. The patient stated that three weeks previously he had had a severe hemorrhage from the ulcer, and as the fragment seemed quite loose, in view of its proximity to the femoral vessels, I advised its immediate removal.

Wishing to consult with his friends he decided to defer any operation for a few days, and went out with some strips of adhesive plaster firmly applied over the part in the hope that, by confining the foreign body, further injury to the surrounding tissues would be prevented.

On the 24th of October he again presented himself, saying that he had been at work in the interim, and had been made much more comfortable by the straps—in fact he had been so much relieved by them that his friends strongly opposed any operative interference, and his coming into the house was in the face of their protest. He stated that four years previously he had cut himself severely over the tuberosity of the left ischium, and it seemed possible that the offending substance might be an exfoliation which had travelled from that region.

Ether was administered and an incision an inch and a quarter long was made through the skin, when immediately the cause of the trouble appeared projecting from the wound, it being the piece of glass herewith exhibited. (See figure.)

The four sides measured respectively half an inch, an inch and a quarter, an inch and a half, and an inch and three-quarters. The part marked (a)



presented, being pressed forward with considerable force by the muscles beneath, and some difficulty was experienced in removing it entire, it being very firmly held by the adductor magnus, for as I was entirely ignorant of the size and shape of the body, I disliked to use force. A safe delivery was, however, at last effected with the aid of some deep incisions, and search was made for other fragments but none were found. I then ascertained that the wound over the tuber ischii, of which he had spoken, was received on the night of January 4th, 1868, being caused by his falling through a sky-light while on duty as a fireman; there had been profuse bleeding at the time of the accident, but the wound had been sewed up by the physician who attended him, who detected no foreign body, and the extraction of the bit of glass, after its interment of four years and nine months caused quite as much surprise to the patient as to any one. On October 29th he was discharged cured.

This case repeats the oft told story of the wonderful tolerance sometimes exercised by the human body of foreign substances imbedded within it; it also, again, enforces the necessity of searching wounds for foreign matters when there is anything in the history of the case to make their presence at all likely, for it can hardly be questioned that our patient passed nearly five years in danger of serious injury from so large and sharp a substance. That he escaped any mishap can only be regarded in the light of a very fortunate occurrence.

Dr. Keating spoke of a case, recently under his observation, in which a needle was imbedded in the tissues of the hand, and asked how far surgeons were justified in examining wounds for such foreign substances.

Dr. John Ashhurst, Jr., thought that this depended upon the position and condition of the wound. In a recent wound, unless the presence of the needle is made manifest by an indurated line, or in some other way, the examination should be limited; if suppuration has been established, a more extended exploration may be made, for, even if the foreign body is not found, a free incision will be of benefit.

Hypodermic use of Ergotin in the treatment of Uterine Fibroids and Hæmoptyses.—Dr. KEATING, in answer to some inquiries from various sources, communicated to the college his experience of the hypodermic administration of ergotin in submucous uterine fibroids as suggested by Prof. Hildebrand, of Königsberg. Although it might be premature, as yet, to speak of experiments which were not completed, yet there were certain results he had already obtained, which he deemed eminently useful and practical.

In one case of uterine submucous fibroid, after the sixteenth hypodermic injection, the uterine tumour had been reduced, by measurement, to one-third of its size, had been forced down upon the cervix uteri, and was evidently endeavouring to force itself through the os uteri. Dr. Keating was prepared to assist its spontaneous enucleation by making a slight opening in its investing membrane, which was tense and unyielding, but was forced to desist for the present from the impaired health of the patient, suffering from a complication of a serious anæmia consequent upon frequent and prolonged hemorrhage and an acute attack of the prevailing influenza. Superadded to this state of things was an annoying irritability of stomach and prostration, apparently to some degree the results of the constitutional effects of the ergotin.

In the above case, the sixteen hypodermic injections (of the following

strength: ergotin gr. xlv; glycerin, aq. destil., āā m̄cv. Syringeful, or about twenty drops administered each time) were injected consecutively within the space of eighteen days. They were all applied over the abdomen below the umbilicus. Their application was always attended with excessive pain, the patient suffering for near an hour after the injection. With all this intense irritation caused by the introduction of the drug and the proximity of the injections to each other, Dr. K. was astonished to find that only one seat of the injections showed the slightest tendency to inflammation or formation of an abscess, this one spot caused the patient great pain for several days, and from its hard aspect, diffused inflammation, and hardened base, gave her attendant great uneasiness. Upon careful examination it was discovered that this injection was decidedly the most superficial; bearing this in mind all the others were made as deep seated as possible, and although the same intense burning pain followed each application, in not one instance was there even a threatening of an abscess. In considering this point, naturally Dr. K. conceived the impression that the more deep seated the injection, and the more the cellular tissue was avoided, the less tendency there might be to subsequent inflammation and formation of an abscess as sequelæ of hypodermic injections. He would beg leave to make this digression while on this point, and state that his subsequent experience with hypodermic injections in other cases, and with other drugs, have led him to believe that there were ample grounds for confirming his views on that point, and he would suggest its application in cases where such complications threaten.

In the first hypodermic injection the pulse, which was 76, increased fifteen minutes after to 90. Respirations also increased about 4. On the second day the pulse was, before the injection, 73, thermometer $98\frac{1}{2}^{\circ}$. In each succeeding injection the pulse fell, as also the temperature, until finally at the fifteenth injection the pulse stood at 56, respiration about 12, and the temperature remained at 96° . Subsequent to the sixth hypodermic injection, at the expiration of ten minutes, a violent constriction would take place around the heart, lasting about two hours, very annoying and alarming to the patient; sounds of heart very weak, laboured action, continued coldness of the extremities, with numbness. At the end of the twelfth injection a well defined chill came on every day, inappetency and a nausea which finally became so excessive as to cause all food to be rejected and to reduce the patient, previously exhausted by anæmia and influenza, to such a degree, as to force the suspension of further treatment. During the administration of the ergot there was a constant pressure of the tumour on the sacral nerves and on the bladder, and the patient herself fully realized her diminution in size and the descent of the tumour. The nausea and irritability of the stomach continued for some days after the cessation of the employment of the hypodermics, and as the introduction of the finger in the tense cervix uteri would at any moment produce an increased irritability of the stomach, it became evident that some of the abnormal condition of the latter organ was due to the engorging and consequent pressure of a portion of the tumour within the os uteri, a view which was confirmed by the immediate relief consequent upon suppositories of opium and belladonna inserted in the rectum. Since the discontinuance of the treatment and relief of the catarrhal and anæmic condition of the patient, all internal symptoms have disappeared and she herself is anxious for a renewal of treatment. Within a week of

the discontinuance of the hypodermic, a menstrual period supervened with excessive hemorrhagia; two hypodermic injections were administered with the same proportions of ergotin, which seemed in a few hours to exercise a complete control over the flow.

Dr. K. could not hesitate in announcing a confirmation of Prof. Hildebrand's results in the above case. Notwithstanding the partial application of the treatment, the unfavourable circumstances in the broken-down condition of the patient when it was employed, he could but trust that in the reduction of the tumour, the control of the hemorrhage, and the remarkable tolerance of the drug under the circumstances, there were conditions which foreshadowed the most important and the happiest results from the new method of treatment in a class of cases which hitherto had been the opprobrium of gynæcologists. We are on the eve of deriving the most important results from the employment of a drug, the nature of which has been almost confined entirely to midwifery. Dr. K. had derived the most happy results from its employment in hæmoptysis, rarely having recourse to any other remedy in such cases than the hypodermic injection of ergotin. In two cases of vicarious hemorrhage of the lungs he had immediate relief from the use of the ergotin, and, combining with its employment the local action of the galvanic current, had succeeded in bringing on the natural menstruation; in one case after a suspension of four years, in another after one year of constant irregularities.

Dr. K. would take some other occasion of giving to the College his results from the hypodermic employment of ergotin, and also its internal use in cases of chronic engorgement of the os and cervix uteri, of hypertrophy, or from subinvolution of the uterus, and in cases of chronic flexions of the uterus of years' standing, where, with the employment of ergotin and local application of galvanism, he had effected perfect cures, enabling the patient to dispense with the use of pessaries, which at best are necessary evils.

In reply to a question of Dr. John Ashhurst, Jr., Dr. Keating stated that the needle was introduced at the border of the linea alba, and the point carried down to the muscular structures. In this way he was of the opinion, he avoided the tendency to inflammation which exists when the needle is merely passed into the cellular tissue.

Dr. John Ashhurst, Jr., spoke of the employment of hypodermic injections of ergotin in the treatment of aneurisms.

Dr. Samuel Ashhurst had used ergot in a case of purpura hemorrhagica; he thought the deep injections less liable to provoke inflammation on account of their being less exposed to injury.

Feb. 5. Meteorology and Epidemics of Philadelphia.—Dr. WM. L. WELLS read the following report:—

From the record of the temperature kept at the Pennsylvania Hospital, it appears that the average for the year was $54^{\circ}.66$, or about a degree higher than the mean for 48 years, the period during which meteorological observations have been regularly kept at that institution.

In 1872 the warm months were all warmer and the cold months all colder than usual. The most remarkable of these warm months were May 68° , 6 degrees above the average; June $4\frac{1}{2}$ above the average; July 82.3° , nearly 6 degrees above the average, and warmer than the warmest previously experienced in the last 48 years; and August 81.6° , $7\frac{1}{2}$ degrees above the average, and warmer not only than any previous

August, but also warmer than any July in any preceding year; it was however, a little more than half a degree below July, 1872.

As a consequence of this excessive heat of summer, we find an enormous increase in the fatality of those diseases which are more prevalent in hot weather, and above all, in cholera infantum. The total mortality from this cause was 1666; 837 more than in 1871, and 664 more than in 1870; which was, it may be remembered, a remarkably hot summer; hotter than any except that of last year alone. The mortality from cholera infantum in 1872 was 1080 in July; 324 in August; 143 in June; and 59 in September, the average temperature of this last month being 70°, $3\frac{1}{2}$ degrees above the average.

The deaths from sunstroke were 136, to 11 in 1871, and 52 in 1870. Of this unprecedented number, only 10 occurred in persons under 20; 28 died between 20 and 30; 32 between 30 and 40; 33 between 40 and 50; 10 between 50 and 60; 21 between 60 and 70; and only 2 over 70 years of age. There were, as is always the case, many more men than women; this excess being of course attributable to their being more exposed as a rule to the excessive heat by being obliged to walk or labour in the sun. The same reason is, no doubt, the cause of the greater mortality in adults as compared with the young.

The heat of our summer months very seldom causes any increase in the mortality of adults; but, in July of the past year, the mortality was very much increased even among adults, being nearly twice that of June, and greater than that of any other month, except January alone, when smallpox was at its height.

In 1872, there were reported 20,544 deaths; 2962 more than in 1864, which until last year showed a greater mortality than any previous year.

The great mortality of 1864 was caused chiefly by the deaths among soldiers, which amounted to 1598. In 1872, the excessive mortality was caused to a great extent by the epidemic of smallpox, but not by that alone, for although there were comparatively few deaths from some other *zymotic* diseases, more especially scarlatina, yet the deaths from other causes, not *zymotic*, were fully up to the average, and the deaths from diseases of the digestive system exceeded by nearly a thousand those of the preceding year.

In 1872, there were 3551 deaths more than in 1871, nearly 21 per cent. The mortality was one in 37, or 2.7 per cent of the population.

The total deaths under one year were 5862, of which 1221 were caused by cholera infantum alone, an unprecedented number. Marasmus caused 497; convulsions 462; smallpox 347; and pneumonia 267.

Among children between one and two years of age, most died in July, viz., 416; and next in August, 231. After this age the influence of cholera infantum is scarcely felt, for while 413 died of it between one and two only 32 died of it in the next three years. Smallpox caused 188 deaths between one and two years, coming next to cholera infantum; while under one year, smallpox came fourth in the list, as we have just seen; and from 2 to 20 it is first; between 2 and 5 years it caused 446 deaths, while croup (which next to it was the most fatal disease) caused 154 only. Diphtheria was most fatal between the ages of 1 and 5, causing 95 deaths, the total number from that cause being 150; between 5 and 10 smallpox caused 293 deaths, while croup (still next to it in fatality) only caused 44, and the total mortality was 782; between 10 and 15

smallpox caused 152 to 423 from all causes and between 15 and 20 it caused 195 to 685 for all causes. It will thus be seen that between the ages of 5 and 20 more than one-third of all the deaths were from smallpox alone, thus showing that it did not spare even those years of life which are usually most of all free from diseases.

Although it is thus seen that smallpox did not by any means spare the healthiest period of life, yet after the age of 20 we find for a few years a slight increase in the mortality from that disease; nothing, however, in comparison with the increased mortality from other causes. From being the most fatal disease, it steps into the second rank; phthisis passing above it, and retaining that position at all subsequent periods of life.

The deaths from phthisis between the ages of 20 and 30 (at which period this disease causes the greatest mortality) were more than one-third of the total mortality. The proportion which the deaths from phthisis bear to the total mortality were not much altered even by the presence of the great epidemic of the past year.

The total deaths between 20 and 30 were 2163; 733 for phthisis and 474 from smallpox. Then follows enteric fever which caused 97 deaths, this disease showing its full power at this period; pneumonia and disease of the heart come next, causing 79 and 64 deaths respectively.

Between 30 and 40 the deaths were 1892; in numbers a slight decrease, although relatively to the number alive at that period a slight increase over the preceding ten years. Next to phthisis and smallpox came pneumonia 93; disease of the heart 83, and enteric fever 60. This last disease after this diminishes in force, while the two preceding go on increasing.

Between 40 and 50 the total mortality was 1497; next to phthisis 355, and smallpox 144, came pneumonia and disease of the heart, each 86; then cancer 72. This last disease here first comes into prominence, as well as apoplexy and paralysis, which together produced 62 deaths.

Between 50 and 60 the total mortality was 1178; next to phthisis, 190, came pneumonia 89, and disease of the heart 84; apoplexy and paralysis together 81; and cancer 76. Smallpox only caused 65 deaths, falling to the sixth rank.

Between 60 and 70 the total mortality was 1139, very nearly the same as in the preceding 10 years, and of course far more proportionally to the number of persons alive at those periods of life. Phthisis caused 126 deaths. Apoplexy and paralysis together caused 119 deaths; pneumonia caused 81 deaths; disease of the heart 80, and cancer 63; smallpox only caused 35 deaths; 125 deaths are in this period ascribed to old age and debility, rather uncertain terms, which may be looked upon more as predisposing, than as direct, causes of death.

The total deaths between 70 and 80 were 991, a little less than half of those between 20 and 30, but when considered in reference to the proportion between those alive at 20, and those alive at 70, three times as many; 283 deaths are ascribed to old age and debility; 117 to apoplexy and paralysis; 57 to disease of the heart; 54 to phthisis; 51 to pneumonia; 35 to cancer; 17 to congestion of the brain, and only 7 to smallpox.

The total deaths between 80 and 90 were 530; 305 of them from old age and debility; 37 from apoplexy and paralysis; 32 from pneumonia; 15 from disease of the heart; 14 from phthisis, and 8 from cancer.

Of the 110 deaths over 90, 88 are ascribed to old age and debility.

We thus find succeeding each other as the most fatal diseases, cholera infantum from birth to the age of 2 years, smallpox from 2 to 20; phthisis from 20 to 70; and then apoplexy and paralysis as the most fatal diseases in the very old.

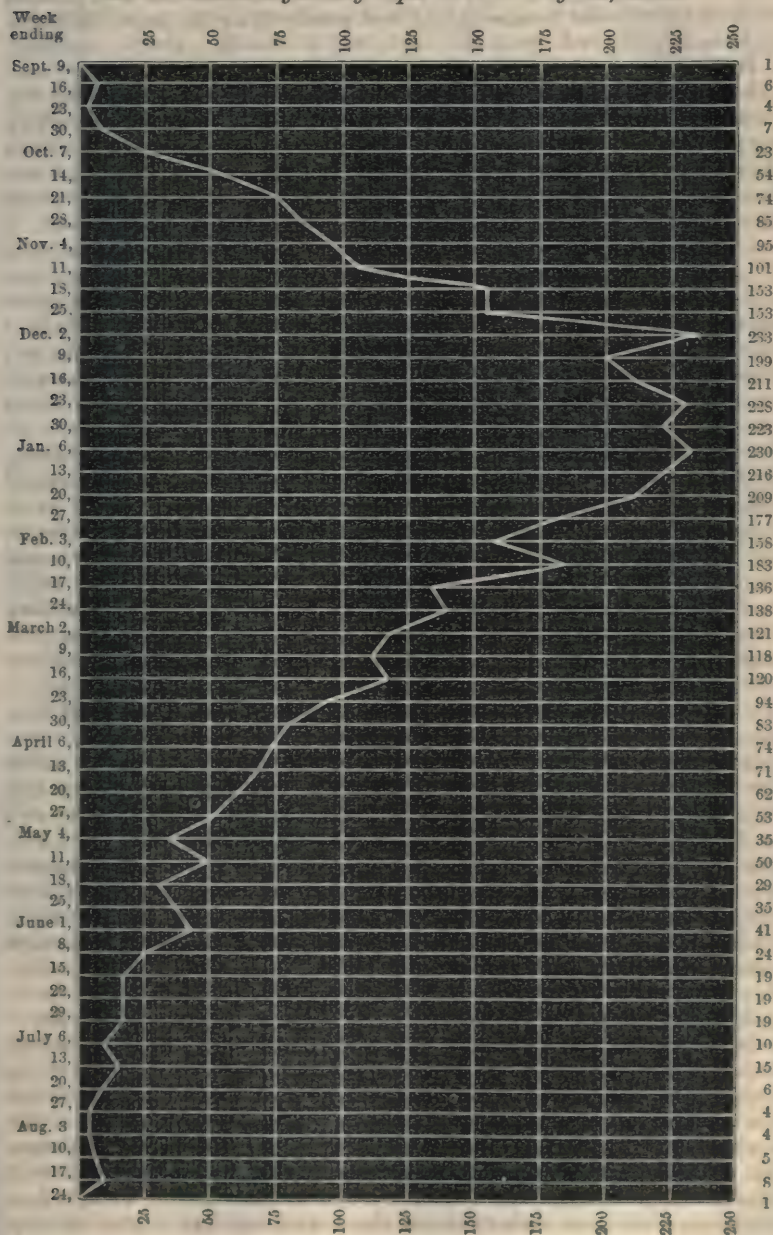
Of persons over 60 years of age the greatest number died in July, viz : 352; next in January, 294; then in May, 253. The least mortality was in November, 165. November was also the healthiest month in the very young, as only 217 children under one year died in it, or not much more than one-seventh of the mortality in July, and of children between 1 and 2 only 47 died in November, only a ninth of the deaths in July, viz : 416. The mortality of children under one year, although specially increased by very hot weather, is nevertheless, as is always seen, excessive at all seasons; while between one and two years, although the morbid susceptibility to heat continues to a certain extent, yet the mortality from other causes than cholera infantum is not much more than a fourth of that of children a year younger. The period of life between 5 and 20 remained remarkably healthy in spite of the epidemic of smallpox, and that part of this period which is between 10 and 15 was the most healthy of all periods of life.

In looking upon the late epidemic of smallpox as a whole, extending into two years, we may consider it as lasting just one year (from September, 1871, to August, 1872, both inclusive), for in the last week of August, of both 1871 and 1872, there were no deaths from that cause, and, although in all in the eight preceding months of 1871 there were 29, and in the four succeeding months of 1872, 18 deaths, yet these numbers are so small that I think we are justified in looking upon the epidemic as of just one year's duration; in which year we find the unprecedented number of 4417 deaths from smallpox alone. In comparing this with previous epidemics, we find not only the total number of deaths far greater, but that there were more deaths in each one of the four months from November, 1871, to February, 1872, both inclusive, than ever before in any one year. The epidemic of 1824, when the mortality was 330 in a population of about one-fifth the present population of this city, was represented in my last report as being nearly equal in severity to the epidemic of 1871. When, however, we compare it with the epidemic of 1872, it falls far behind it; and still more when we compare the entire periods of the two epidemics, for both of them extended over portions of two years. In 1823 there were 160 deaths, and in the whole epidemic of 1823-4, 490 deaths. This multiplied by five, for the purpose of comparison with the present increased population of Philadelphia, will not give so many deaths as in the one year 1872, and not much more than half the deaths in the whole epidemic which has just passed away.

When we look at the course which smallpox took during the whole period of its reign here, we find that it occupied only three months in attaining its maximum at the end of November. During December the number at first sank, and then rose again to 230, only 3 less than in the week ending the 2d of December, which was the week when the disease was at its height. From the 6th of January, 1872, when the number of deaths began decidedly to decrease, seven months passed away before smallpox, which took only three months to rise, had again fallen to only one death in a week.

The following diagram shows the progress of the mortality from smallpox in this epidemic visitation :—

Diagram of Deaths per week from Smallpox in Philadelphia, for the 12 months beginning Sept. 1871 to Aug. 24, 1872.



Although smallpox had such a definite course and has come thus completely to an end in Philadelphia, yet in many other places it lingers on; both in England, where it began as an epidemic more than six months before its beginning here, and also in this country, both north and south of Philadelphia, in Boston, Brooklyn, and Baltimore. On the continent of Europe it is reported as spreading into the north of Russia.

In Philadelphia, taking the total mortality from smallpox in the two years, 1871 and 1872, viz., 4464, we find that 556, or about one-eighth, were of children under one year. This, when compared with statistics taken in England, shows a rather small proportion of very young children here; for it was found that of 42,227 deaths from smallpox in England from 1856 to 1865, 10,223, or nearly one-fourth were under one year.

In reference to the protective power of vaccination, the only statistics which are available are those of the municipal or smallpox hospital; and these show its protective power, but observations taken on the largest scale in Europe are more conclusive than anything we have in this country, as for example in Bohemia, where in 21 successive years, observations were taken in the whole country, showing that of cases of smallpox contracted after vaccination only $5\frac{1}{8}$ per cent. died, while of the non-vaccinated $29\frac{1}{2}$ per cent. died. Also observations made in England on 50,000 children in the schools showing that of every thousand not vaccinated, 360 were scarred with smallpox marks, while of those vaccinated only 1.78 had such scars.

Cholera has not visited us (for we may overlook the 16 deaths in the past year, as insignificant in a population like ours), and it does not even present a more threatening appearance than at the close of 1871. It remains in Russia, attacking first one part of the country and then another, extending more or less from the north to the Black Sea, and oscillating more or less in its attacks. In St. Petersburg it was reported that one-fourth of the cases died.

A good deal of influenza and more cases of pneumonia than usual have been seen here in the autumn and winter.

An attack of influenza began among the horses of Philadelphia about the 27th of October, and proved universal. It was very serious and of a typhoid character, followed for some time by great debility and liability to pneumonia and dropsy, and attacking nearly all the horses almost simultaneously. A yellowish discharge from the nostrils usually accompanied it. It had attacked most large cities to the north of us before it came here; those to the south being attacked subsequently. Comparatively few cases proved fatal, unless overworked or exposed to cold.

March 19. On the Hypodermic Use of Ergot or Ergotine in the Treatment of Uterine Fibroids.—Dr. JOHN ASHHURST, Jr., referred to the interesting remarks made by Dr. Keating at a previous meeting of the College (see page 131), upon the employment of ergot by the hypodermic method in cases of uterine fibroid, as recommended by Prof. Hildebrandt, of Königsberg (see *American Journal of the Medical Sciences*, October, 1872, p. 567), and gave some details of a case which had been thus treated at the Episcopal Hospital, and which, as far as a single case could, confirmed the deductions of those gentlemen as to the value of this mode of medication. Dr. Ashhurst's patient was suffering from a submucous fibroid tumour, developed in the anterior wall of the uterus,

and when she came under Dr. A.'s care was just recovering from an attack of peritonitis which had followed an unsuccessful attempt to remove the growth by means of an *écraseur*. The fluid extract of ergot (or ergotine, as it is sometimes called) was employed according to the following formula: R. Ext. ergotæ fluid. ℥iiss; glycerinæ ℥j; aquæ ℥ij. Of this preparation twenty minims, containing nearly seven minims of the fluid extract, were used at each injection, and the injections were, unless omitted from some special reason, made once daily. The point of injection was invariably in the sub-umbilical region, on one or other side of the linea alba, and care was taken, as recommended by Dr. Keating, that the nozzle of the syringe should be carried fairly down to the level of the muscular parietes. After sixteen injections had been administered, a vaginal examination was made, and it was found that, as nearly as could be estimated, the tumour had diminished in size by one-half. It was intended to wait for a week or ten days, and then to begin another course of injections, from which it was hoped that, at some future time, still further improvement could be reported.

Dr. Ashhurst remarked, as a matter of interest, that in his patient (unlike Dr. Keating's) no unpleasant constitutional symptoms whatever were produced by the hypodermic use of ergot; on the contrary, during the whole course of treatment, the patient daily gained in health and strength, and passed through a menstrual period (during which the treatment was of course suspended) without any undue loss of blood; and although when questioned she said that the use of the syringe was always followed by some hours of pain at the point of injection, yet the pain was never so great as to induce her to make any spontaneous complaint.

On Iodoform as a Topical Application to Venereal Ulcers.—Dr. JOHN ASHHURST, Jr., also mentioned that he had been using iodoform lately, in a number of cases of chancreoid and of syphilitic disease, with very gratifying results. The preparations employed, beside the drug in powder, were those recommended by Dr. Izard, and by Dr. Damon, of Boston, viz., an ointment (R. Iodoformi ℥iiss; adipis ℥j); and a solution in glycerine and alcohol (R. Iodoformi ℥iiss; glycerinæ ℥vj; alcohol ℥ij). The latter was preferred so long as the discharge from a venereal sore was profuse, the powdered drug being applied to the ulcers in their later stages, while the ointment was reserved for cases of unopened chancreoid bubo, and of unulcerated gummatous tumour. In the treatment of chancreoids, Dr. Ashhurst had continued to make at the beginning one thorough cauterization with nitric acid, and in the treatment of syphilitic ulcers had of course not neglected to direct suitable constitutional treatment, at the same time that he had employed iodoform as a topical remedy. From the results which he had obtained, he was disposed to think that iodoform would prove a valuable addition to the surgeon's repertory in the treatment of all varieties of venereal ulcers. He did not think that iodoform, at least in its external applications, possessed any anti-syphilitic virtues; he regarded its action as entirely of a local character.

Dr. W. S. W. Ruschenberger stated that he had employed iodoform for the past three years both internally and externally, with the most satisfactory results. He had used it in phagedenic ulcerations and also in carbuncle. When applied in substance he thought it should be in a

state of very fine powder, otherwise it would, in some cases, provoke irritation. The ointment (iodoformi ʒj; ol. theobromæ ʒss) was a favourite preparation with him.

Dr. Edward Hartshorne inquired whether Dr. Ashhurst had observed, in the cases treated by him, any symptoms of iodism. Iodoform contains so much iodine (about nine-tenths) that it might be apt, when employed as freely as stated, to produce the constitutional effects which are sometimes noted in the use of iodine and of iodide of potassium.

Dr. Ashhurst said in reply that he had not observed constitutional effects in the cases under his care; he added that he was somewhat skeptical on the subject of the absorption of medicines from suppurating surfaces, and mentioned that he was in the habit of dressing amputation wounds with pure laudanum, using it in large quantities and for a number of days consecutively, without the occurrence of any symptoms indicating constitutional implication; he doubted whether under such circumstances, any appreciable amount of the drug was absorbed.

Dr. Ruschenberger stated that he had administered iodoform internally in one-grain doses, and had not observed symptoms of iodism in any instance.

Dr. J. S. Parry had employed iodoform internally in cases of inherited syphilis, in children from three to twelve years of age, continuing its administration from one month to six weeks—in one case he administered the remedy for six months. In these cases he failed to observe any good results follow its use. In one case of nervous palpitation of the heart the patient was materially benefited by one-grain doses three times daily—symptoms of iodism did not occur in any case.

Deep-seated Abscess in the Neck.—Dr. WALTER F. ATLEE related a case of this which he had seen that afternoon in consultation. The patient, a young man of twenty-five, had had for some time a large circumscribed swelling on the left side of the neck, just below the angle of the jaw, which was supposed by his attending physician to be caused by a syphilitic tumour. Three days ago this rounded projection subsided, and at the same time the whole anterior portion of the neck became greatly enlarged, the skin covering it was evidently tightly stretched, and it was almost impossible to swallow even a little liquid.

Under the opinion that these symptoms were caused by the pressure of matter poured out from an encysted collection that had burst open, an incision was made through the skin and fascia, in the position chosen for ligation of the carotid artery. This gave outlet to a large quantity of a purulent liquid, less creamy and more gelatinous in appearance than ordinary pus. The difficulty of swallowing was at once relieved.

The case, in some respects, resembles those described by Dupuytren under the name of *phlegmon large du cou*, where an inflammatory abscess is seated deeply behind the sterno-mastoid muscles and cervical aponeurosis, and extends easily towards the head, and above all towards the chest.

REVIEWS.

ART. XVI.—*The Medical and Surgical History of the War of the Rebellion* (1861–65). Prepared in accordance with Acts of Congress, under the direction of Surgeon-General JOSEPH K. BARNES, United States Army. [Part I. Volume I., Medical History. By J. J. WOODWARD, Assistant Surgeon, U. S. A.] Royal quarto, pp. xliii. 726.

Appendix to Part I., containing reports of the Medical Directors, and other Documents. Edited under the direction of Surgeon-General JOSEPH K. BARNES, U.S.A., by Assistant Surgeon J. J. WOODWARD, U.S.A., and Assistant Surgeon GEORGE A. OTIS, U.S.A. Royal quarto, pp. 365. Washington: Government Printing Office, 1870.

THIS volume of 1100 pages is the first of three, or more, to embrace the medical portion of this history. This instalment is itself divided into two parts and an appendix. The parts present the statistics of disease and death, respectively, among the white and the coloured troops. The appendix, occupying nearly one-third of the volume, is made up of reports and statements from medical officers, in field and hospital, to their superiors. The paper and type are good, and the printing but little disfigured by typographical errors.

The portion of this grand work, now before us, is the fruit of a Congressional appropriation made in June, 1868.

From the preface to the entire work, written by General Barnes, it appears that Dr. Hammond, then Surgeon-General, began as early as May, 1862, to institute measures to secure more detailed and accurate reports of sickness and injuries. Almost at the same time he announced the intention of the Bureau to collect and arrange materials for a Medical and Surgical History of the Rebellion. With an energy and a breadth of view in his department, comparable to that of Mr. Stanton in the War Office, Dr. Hammond laboured most successfully not only to promote the health and comfort of our troops in the field, camp, march, and hospital, but also to garner up the precious lessons which should utilize for the healing of posterity the heroic suffering and devotion of their fathers. We regret that Dr. Barnes gives but half a dozen lines to the services of his predecessor.

In carrying out and extending these designs and improvements, Dr. Barnes seems to have laboured with zeal and intelligence. Improved blanks were devised, surgeons were stimulated to observe carefully, and record faithfully, and their attention from time to time directed to matters of importance which might not otherwise have been uniformly observed. In a circular issued to all army surgeons, they were requested to notice in their reports the following points: "The *morale* and sanitary condition of the troops; condition and amount of medical and hospital supplies, tents and ambulances, etc.; the points at or near the field where the wounded were attended to; degree of exposure of wounded to wet, cold, or heat; adequacy of supplies of water, food, stimulants, etc.; mode of removal of wounded from field to field-hospitals; to what general hospitals

the wounded were transferred; by what means, and where; the character and duration of the action, nature of wounds received, etc." Without careful and earnest attention to, and record of, these and such conditions, on the part of all surgeons, "the vast experience of the past," says Gen. Barnes, in an order of November 23, 1861, "will remain with individuals and be lost to the service and to the country." In each army the Medical Director was instructed to appoint proper subordinates to collect, prepare, and send to Washington all statistical and other facts useful for the contemplated Medical and Surgical History of the War. Early in 1864, special blanks were issued for the separate record of secondary hemorrhage, tetanus, and pyæmia.

The machinery of the Medical Bureau of the War Office naturally underwent the same progressive change as occurred in all departments of the government. Juster and ever growing appreciation of the greatness of the struggle, and experience of the working of methods, led to frequent changes in the forms by which facts were recorded. It would be unreasonable to expect in the earlier records of the war, the exactness and excellence of arrangement which only experience makes possible.

The collection of material for a grand pathological and surgical museum, from field and hospital, was, if we remember rightly, originally suggested by Dr. Hammond, and was carried on with more or less persistency and zeal. About two years before the close of the war we find a general order aiming to facilitate the preservation of specimens, and their transportation from distant posts to Washington. Surgeons were requested to label and properly wrap, or preserve in kegs of spirit, the specimens in the rough, to be forwarded when enough were collected, with descriptive lists, to the curators of the museum. Certain kinds of specimens are named as particularly desired. In this memorandum are included: excised portions of bone; exfoliations, especially from stumps; examples of changes occurring in stumps, such as occluded arteries, bulbous nerve ends, rounded bones, etc.; wounds of entrance and of exit, in integument, by different shaped balls; wounded nerves, vessels and viscera; photographic views of perishable specimens and remarkable cases; plaster casts; models of ingenious or especially useful apparatus, etc.

From this and similar orders, vivified by the general zealous coöperation of army surgeons, by the hearty encouragement of Mr. Stanton, and rendered fruitful by the skill and devotion of Drs. Woodward and Brinton in charge of the museum, has resulted a collection of incalculable value. To this, however, the volume before us refers only incidentally, and we mention it to show the scope of the grand plan of which both are parts.

For convenience, and to illustrate the influence of climate upon health, the country occupied by our armies is here divided into three great regions, Atlantic, Central and Pacific. The Central embraces the area between the Rocky and the Appalachian chains, including the shores of the Gulf. The extent of the other regions is obvious. These again are subdivided into districts bearing the names of the different military departments. The subdivisions, of course, do not precisely coincide with the military localities of the same name, since the latter sometimes change by division, extension, or consolidation. The preëminent importance, however, of keeping together the statistics of the principal armies, led the compiler to adhere to the departmental names, with explanatory notes whenever their geographical extent was essentially changed.

In the tables for each department we have a list of diseases and causes of

death, amounting, at different times, to from one hundred and thirty to one hundred and seventy particulars. These are arranged in five classes, zymotic, constitutional, parasitic, local, and wounds, accidents, and injuries. Most of these classes are divided into orders: thus the zymotic embraces three, miasmatic, enthetic, and dietic; and these three orders include thirty odd particulars. The local class contains nine orders, among which are found disorders of nerves, circulation, respiration, and digestion; covering some eighty or ninety particulars. The constitutional has two orders, diathetic and tubercular. Dr. Woodward explains that the classification employed is founded on that of Dr. Farr, originally prepared as a report to the Congress of European Statisticians which met at Paris in 1855, and discussed there and at subsequent meetings at Brussels and Vienna. Though not adopted by the Congress, it has since been employed in the reports of the Registrar General of England, and in those of the British army, as well as in many other recent statistical reports. Having been thus widely used, convenience of comparison more than intrinsic merit dictated its employment here. Some change was, of course, necessary to adapt to the recording of disorders in adult males, a classification designed for both sexes and all ages. After the close of the first year of the war, moreover, experience led to some changes in the orders, and a considerable variation in the particulars under some of these.

The first tables exhibit the sickness and death of troops in the two regions then occupied, Atlantic and Central, during May and June, 1861. The third is a consolidation of the former. Cases are enumerated in one column and deaths in another, upon a horizontal line with each disease-title; the mean strength of the army for each month is placed at the head of the monthly columns.

It is at first a little startling, to read that in May, 1861, out of a mean strength of 16,161 there were reported 5130 cases of illness, including 26 gunshot wounds, with only 19 deaths. In the same Atlantic region in May, 1864, when some of the heaviest fighting and most terrible exposure of the whole war occurred, out of a mean strength of 216,639 there were but 60,000 cases and 1600 deaths, while 25,000 of the cases were gunshot wounds. To 1217 cases of acute, and 61 of chronic diarrhœa, with 104 of acute dysentery, and 423 of other digestive derangements, we find, in the period first named, not one death! Out of 79 cases of "inflammation of the lungs" we find but two deaths. In June the facts are much the same; doubtless haste and inexperience, with sudden change of habits, caused much slight illness; while all serious cases were allowed to depart for their homes, and were thenceforth lost to the army records. Many other considerations bearing on the facts will readily suggest themselves to the reader. It is to be remembered, also, that these first months had no deaths from cases of previous months, while some portion of *their* cases doubtless proved fatal subsequently.

For the next year, June 30, 1861, to June 30, 1862, the tables exhibit the facts for separate departments of each region and for each month. The statistics of the Atlantic region include seven departmental tables, with a special table to show *cases originating in*, and deaths occurring in, the general hospitals of the region. Then follows a consolidated table to exhibit the totals; here we still find reported a very light mortality in comparison to the cases; but the proportion of cases for the month of May is much less, and that of deaths to cases, even excluding those from wounds, very much greater than for the previous May.

The statistics of the Central region, for this year are in like manner exhibited, in six departmental tables, one hospital, and one consolidated table. Those of the Pacific region require but three tables, and each with limited numbers.

Table xxiv. exhibits, opposite each disease-title, and under each month with its mean strength, the cases and deaths, so far as reported, in the entire armies of the United States for the year ending June 30, 1862. Glancing along the line assigned to typhoid fever, and allowing for the varying mean strength of the army, we find the cases increasing rapidly from 1 in 550 in July, up to 1 in 100 in November; then diminishing slightly in December; a little more rapidly in January; more decidedly in February and March when they amount to 1 in 260; after which they increase nearly two-fold in April, to which point, after a further rise in May, they do not quite fall in June. Thus, the cases seem nearly four times as numerous in the last as in the first month of the year; the mortality is about one-fourth for the year. It would obviously be unsafe to draw hasty inferences from these figures as to the prevalence of typhoid at different seasons. It might happen, for instance, that in a month usually free from this disease, large bodies of troops might happen to be collected under circumstances peculiarly favourable to its development; or conversely, in the season when it would be looked for, the sanitary condition and surroundings of the larger armies might chance to be unusually wholesome. We do not say this to depreciate the value of tables, but to illustrate the need of more than a superficial view of them in order to draw correct inferences. In this particular instance, however, we ought to mention, what we shall subsequently find stated by several army surgeons, in the appendix to this volume, that there is reason to believe that considerable difference of opinion and practice existed as to the diagnosis and differentiation of this fever from typho-malarial and even from remittent.

At the end of the regular sequence of tables for the year 1863-64, a special table is presented to exhibit the medical history of the "march to the sea." Although the cases herein contained had been already classified under their proper departmental heads, it was very wise to present them in this shape, owing to the great historic importance of the expedition and its thoroughly exceptional character. With a mean strength of 142,000, the two months' campaign presents 62,871 cases, including 14,000 of gunshot wounds, and a total of 548 deaths, of which 426 were from wounds. During those same months, in the entire army of 630,000, there were over 300,000 cases with 10,000 deaths, and 60,000 wounded gave 4600 deaths. Of course, there were no immense general hospitals to swell the deaths of the great march; confidence in their leader, and a consciousness that they were achieving a wonderful exploit, had undoubtedly some influence in preserving the health of the men.

Although the war ended before June 30, 1865, the tables are continued during the succeeding year.

Table C [one hundred] shows the cases and deaths, due to each cause, in the entire body of white troops, during each year. The mean strength in field and garrison united, and mean number in general hospitals, are placed at the head of each yearly column. In the grand total for the five years we notice reported 75,000 cases of typhoid, with 27,000 deaths; 50,000 typho-malarial, with 4059 deaths; 286,490 remittent, with 3853 deaths; acute and chronic diarrhœa and dysentery, 1,500,000, with 38,000 deaths; inflammation of the lungs 61,202, with 14,738 deaths. It is

creditable to our medical and administrative officers that but about 31,000 cases of scurvy with 400 deaths are reported in the whole five years, with a mean strength of half a million.

The amount of yellow fever, 1181 cases with 409 deaths, seems wonderfully small when we consider the number of troops at different times stationed at posts where it is either a frequent or an occasional visitor.

The mortality assigned to measles, 4246 in 67,763 cases, does not represent fully the results of the disease, which was often followed by fatal lung trouble. Diphtheria—not in the lists of the first fourteen months—out of 7277 cases shows a mortality of 716. Over a quarter-million cases of rheumatism present a mortality of 475. "Consumption," 13,500 cases, gives 5286 deaths. Tape-worm is reported in 548 cases, with one death. Epilepsy is credited with 9029 cases and 332 deaths. Aneurism presents 249 cases and 58 deaths. Some 7000 cases of different forms of heart disease exhibit 1238 deaths. We may briefly enumerate the following causes of illness and death: asthma, 9000, and 75; bronchitis, acute and chronic, 200,000, and 1179; inflammation of the pleura, 32,000, and 600; hernia, 24,353, and 39, of which cases we believe a very large proportion existed prior to enlistment and should have prevented it.

Gunshot wounds exhibit a total of 230,018, with 32,907 deaths; of course there are included in this designation only the cases that lived long enough to be picked up and cared for. About 43,000 cases are reported of punctured, lacerated, and incised wounds, with 870 deaths. Only 301 suicides occurred; and of executions, 104.

The next table exhibits the discharges of white troops on Surgeon's certificate of disability. Some of the causes of discharge are as follows: diarrhœa, 16,000; debility, 14,000; rheumatism, 12,000; consumption, 20,000; epilepsy, 3872; paralysis, 2838; eye-diseases, 4000; deafness, 1157; heart-disease, 10,636; hernia, 9000; gunshot wounds, 33,458; amputation, 5832; wounds unspecified, 4878; old age, 2600; under age, 425; stammering, 20.

The following three tables exhibit the facts concerning coloured troops during the year ending June 30, 1864, in the Atlantic and the Central regions, and both combined. By the latter we notice that typhoid fever was about three times as common as among the white troops in the same year, with a proportionate mortality slightly larger; and typho-malarial was still more largely prevalent, with a death-rate of one in five, against one in ten among white cases. Remittent, with little excess in cases, appears three times as fatal among the blacks. Intermittents, generally a little more common among the blacks. These also suffered more from rheumatism. Scurvy was about six times as common, and more fatal. Bronchitis, nearly in the same excess, and still more largely fatal. Pneumonia, just about the same proportionate excess, but with a mortality not excessive. Diarrhœa and dysentery were somewhat more prevalent and very much more fatal. Measles about four times as common, and more deadly. Scarlatina is not credited with one case among the coloured soldiers.

These facts as to malarial diseases seem quite contrary to common opinion before the war. It may indeed be that the apparent excess of these complaints among the blacks is, in part, owing to the fact that they were largely employed at the most malarious posts on account of their supposed immunity. But allowing all weight possible to this consideration we are forced to conclude that the African race has not

the endurance of the whites under the labours and exposures of camp and field.

We have chosen the tables of one year by which to compare the statistics of the two races, rather than the tables of totals, because the latter do not correspond in extent of time, being five years for the white and three for the coloured soldiers.

Passing over the remaining tables, as similar in structure and significance to those noticed, we come to the appendix. Here are printed, with many neat maps, such portions of reports and statements made to the central medical authorities as seemed of permanent value.

The first report, by Medical Director King and some of his subordinates, relates the sad story of the first Bull Run battle. Exhaustion of the men, by forced marching and running, by order of excited and imprudent officers, under a burning sun, is believed by Dr. King to have been an important agent in deciding the battle.

The evils consequent upon the haste with which the first troops were sent into the field, are illustrated in all the earlier reports. They are quite fully and graphically set forth by Medical Director Tripler, in his report upon the first year of the war. Even at the best, these reports are sad reading. The enormous extent of country covered by army movements, often sparsely settled and unproductive; the frightful roads, and deep rivers to be bridged or passed in boats; the terrible swamps where movements were inconceivably laborious, and where malaria destroyed the weak and sapped the vitality of the strong—these and many other circumstances, rendered great suffering inevitable. When in addition to these, however, we read of incompetency, and ignorance, and negligence, the picture takes a still darker hue. The fruits of appointing men to military command, and in some cases to medical positions, for political reasons, are but too visible throughout these pages. In the early months of the struggle, a certain amount of suffering from the necessary inexperience of men and officers of all kinds could not be avoided. But there seems to have been a melancholy lack of central, organizing force, to arrange, regulate and control. Duties and privileges of medical officers were undefined, unknown, and often much misconceived by themselves and by others. If, for instance, a surgeon had the intelligence to perceive causes of disease, and a sense of duty powerful enough to attempt their removal by measures which the commanding officer alone could order, he was but too liable to see his counsels despised, and himself snubbed. And so, such removal of camp, or more careful police, or different diet, or personal cleanliness, or change of routine, as might have saved the men from morbid agencies, or better enabled them to resist them—all these were neglected by some conceited commander; and the faithful surgeon could only fight at fearful odds the foe which he would have kept out of the camp altogether.

Dr. Tripler urges very strongly the necessity of giving to medical officers such rank and position in the army as should give to their counsels greater weight of authority.

The enlisted men furnished fully as striking proofs of culpable mismanagement in raising regiments as did the officers. The aged, the feeble, the epileptic, the ruptured, broken-down vagrants and callow youths—through the criminal carelessness or even connivance of sworn examiners, were received in large numbers. We wish it could be said that such misconduct was confined to the first year of the war. In fact, the fraud and infamy continued and even grew. Once in the field, this unfit class of re-

cruits melted away like dew before the sun. The treasury was robbed, the hospitals filled, the heart of the nation sickened by defeat where victory should have been certain, and thousands upon thousands of good men continued to be sacrificed on the altar of political and private vain-glory and avarice.

It is remarked by many surgeons that much illness in the first months of the war was caused by the total, and very natural, ignorance of both officers and men in the volunteer regiments, concerning all the little matters which make camp-life comfortable and healthful. To cookery, washing of clothing, and police duty, they were wholly unaccustomed; these were distasteful to them, and consequently were too apt to be badly done.

In reading the clear and modest narrative, by Medical Director Tripler, of the McClellan Peninsular Campaign, we realize, as never before, the difficulties and discouragements under which was performed the medical superintendence of that army. That it was so well done, seems little short of marvellous, in the light of this and accompanying reports.

Up to the battle of Antietam great embarrassment resulted from the frequent loss of all medical supplies, in retreating. At that time a change was made, whereby such supplies were issued in much smaller quantities so as to be much more portable; and arrangements were made for frequent and easy replenishment. The removal and care of the wounded, too, seems to have become more systematic and efficient.

At the Gettysburg battles, judging from the report of Medical Director Letterman, the appliances for succouring the wounded were remarkably effective.

The ambulance system cannot be said to have reached its highest excellence until the enactment of the "Ambulance Law" in March, 1864. Experience, and the views of the leading surgeons, all favour the plan of having a regularly organized and permanent corps of able-bodied men properly drilled and disciplined, with stretchers and ambulance wagons, whose sole and exclusive duty is the removal of the wounded from the front during action, and their transportation to such points as are desired. Not only are the wounded thus best cared for, but an immense amount of skulking during action is prevented.

As a reminder of the terrible Virginia campaign in the spring of 1864, we will mention a letter of Medical Director McParlin, dated June 5, and addressed to Gen. Grant. In it is mentioned the fact that the army had been marching and fighting thirty-two consecutive days, drinking swamp water, surrounded by animal and vegetable putrefaction—thousands of men, horses, and mules lying dead on the surface of the ground—deprived of vegetable food, seriously affected with diarrhœa, and threatened with scurvy. This appeal was followed by a week of comparative rest, during which every effort was made to improve the surroundings and the diet of the troops; and with perceptible good effect.

We have glanced over scores of reports relating to the later events of the war, as viewed by medical men in the Potomac and other Virginia armies; and also several concerning the coast-wise expeditions sent to points on the Carolina shores. To cull every interesting statement would much exceed our aim and limits. One thing is conclusively proved by the medical history of these expeditions which is directly contrary to general belief before the war. Here we have seen northern white men, not only living but performing almost herculean labours, under the greatest possible exposure, amid the most pestilent swamps of the South Atlantic coast,

with a rate of sickness and death not greater than in many other campaigns.

Reports from surgeons in western armies contain narrations of intense interest, connected with the principal great battles of Missouri, Tennessee, and upper Georgia. The amount of illness caused by exposure during the siege of Fort Donelson, and the subsequent operations along the banks of the Tennessee, seems to have been almost appalling. The terrible battle of Shiloh, we are told, found the medical officers very ill-furnished with needful supplies. Energetic measures taken by Drs. Simons and McDougall, procured an abundant supply of medical stores in time for the succeeding great battle at Corinth.

It is an ungracious task to criticize the writings of brave and faithful men regarding matters that occurred when they were too busy saving life and relieving suffering, to find time for much literary labour. Still, it seems to us that there is a singular lack of plainly stated practical deductions from individual experience and observation. The events of battles and campaigns are graphically described. The hurry and terrible earnestness of field and hospital labour after a conflict, are brought vividly before us. The terrible scenes attendant on defeat, abandonment of the wounded to die on the field, or to receive tardy succour with deprivation of the facilities for proper care, are portrayed in all their horror. In many instances, the varied influences upon health, of diet, water, marching, shelter and climate, are instructively displayed. But comparatively few of these writers seem to impart to us what they themselves learned by their noble and arduous services.

Best, however, we should seem to do injustice to our professional brethren, we will note a few points from a report by Dr. H. S. Hewitt, Medical Director of the Army of the Ohio. He remarks on the immense injury done by officers in disregarding the natural powers and state of health of their men. A single forced march, imprudently ordered, will knock up scores out of a regiment. Inattention on the part of regimental and company officers, to the personal cleanliness and habits of their soldiers, is equally disastrous. Especially harmful is it for the private to be allowed to eat his meat raw, or badly cooked. A close personal interest in, and supervision of all such, and other matters affecting the daily comfort of the soldier, should be considered not only a moral but a military duty on the commander's part. Such care and thoughtfulness will always meet, not one, but many, rich rewards. Each company should have a skilful cook, by whom not only would the health and comfort of the men be incalculably benefited, but the cost of wages saved through greater economy by the use of the allowed rations. Dr. Hewitt urges with great force the importance of instituting at West Point a professorship of military hygiene, in order that future officers may know something about the preservation of health, and be at least qualified to appreciate the suggestions which may be made by their surgeons. The use of pine boughs for bedding, and even for hospital huts, was found both comfortable and wholesome. Not only Dr. Hewitt, but many other surgeons, remark upon the existence at times in our armies of a sort of scorbutic cachexia, very seriously and extensively impairing the health and powers of resistance, while yet there were few or no open cases of the disease itself. Dr. Hewitt had the fortune to observe several cases of the disturbance caused by the explosion of shells, near, but not striking, the head. The symptoms were of a very serious character, uniting the traits of cerebral concussion with those of

severe shock. In the treatment of chronic diarrhœa, Dr. H. relied greatly upon small doses of Fowler's solution with opium, together with extensive application of tinct. iodine over the abdomen and along the spinal column. As an application for the relief of painful wounds, he speaks in the very highest terms of sulphate of morphia applied dry directly to the raw surface. Especially happy were the results of this treatment in wounds of the chest and abdomen. In discussing some of the vexed questions as to treatment of gunshot fractures of femur, he points out that the only possible condition of saving a comminuted thigh, is perfect rest; unless that can be secured it is folly to attempt to save the limb. Alarming secondary hemorrhage he has often perfectly controlled by the actual cautery.

Several other writers mention the great diversity of opinion about the fevers encountered in the army. Typhoid, and typho-malarial, are names which different surgeons would apply often to the same case. True typhus was recorded so seldom as not practically to assume any importance. During the first year a heading "continued fever" was employed; and this seems then to have received the cases afterwards assigned to typho-malarial, which title did not at first exist in the disease-lists. It seems probable that remittent was sometimes confounded with the other fevers; but it was only between the two first-named that serious confusion obtained. Some surgeons, whose opinions seem of more than average weight, believe true typhoid to have been much less common than is generally supposed.

Many writers in this appendix advert to the marked influence of defeat or victory in determining the recovery or death of the sick and wounded.

Considerable testimony is borne to the prophylactic virtue, in malarious districts, of quinia and whiskey given together. Strange to say, one surgeon refers to the difficulty of getting the men to take the medicine. One sensible surgeon largely diminished the prevalence of malarious affections in his camp by inducing the commander to refrain from turning out the men at an unseasonably early hour—to wait hours for breakfast—and by procuring the issue of hot coffee immediately after roll-call.

Referring to the feeling of northern physicians that quinia was used in needlessly large doses, it is claimed that much larger amounts were necessary in the South than at the North. One surgeon, advocating the use of mercurials with quinia, in commencing treatment, states his belief that the army ration is too rich in carbonaceous material for use in a southern climate; and that by its continued use the liver is overburdened and congested.

We have been struck in glancing over these hundreds of reports by army surgeons, with the almost total silence concerning the Sanitary Commission. Only one mention of the existence of such an organization do we remember to have met. If this body did anything to relieve the sick and wounded and to preserve the health of the well, its services should have been frankly acknowledged in these reports, and such acknowledgments printed in this work. If it did no good, or harm rather than good, that fact should have been stated. The people of this land freely gave millions of money and incalculable labour, under the belief that they were aiding the noblest charity and discharging the most sacred duty. Such silence in a work intended to stand as a monument and memorial to all time, can scarcely be excused. We hope the omission will be in some measure supplied in later volumes.

B. L. R.

ART. XVII.—*The Medical and Surgical History of the War of the Rebellion.* (1861–65.) Prepared in accordance with Acts of Congress, under the direction of Surgeon-General JOSEPH K. BARNES, United States Army. [Part I., Volume II., Surgical History. By GEORGE A. OTIS, Assistant Surgeon, United States Army.] Royal quarto, pp. clvi., 650, xiv. Washington : Government Printing Office, 1870.

THIS magnificent volume, though bearing the date of three years since, contains, especially in its later portions, a great deal of information belonging to a more recent period; so that it might fairly have borne on its title-page the date of the present year, without its writer incurring any risk either of his work being thought antiquated, or of himself not being considered fully informed as to the surgical questions of the day. After a few pages of prefatory matter, signed by Surgeon General Barnes, Dr. Otis takes up the pen and presents himself to us as the author—or, as he modestly prefers to call himself, the reporter or compiler—of the more than eight hundred large and closely printed pages which constitute the bulk of the volume. To these pages criticism (in the ordinary sense of the word) is hardly applicable—for who can criticize facts?—and it is with facts that Dr. Otis mainly deals; he has, indeed, added comments and deduced conclusions, which approve him both the learned scholar and the judicious, practical surgeon, but his comments are so just and reasonable, and his deductions so fully sustained by the facts from which they flow, that the doubter can but give assent, and the critic waive cavil and join in hearty admiration of the great work accomplished. Hence, in the space allotted to this review, we shall confine ourselves principally to analysis and quotation, aiming to give those of our readers who may not be so fortunate as to have access to the book itself, a fair notion of the immense amount of labour which Dr. Otis has gone through, and of the rich gain to surgical science, which has been thus, through his instrumentality, acquired.

In his introduction Dr. Otis refers to the plan on which it was at first intended that the *Medical and Surgical History of the War* should be written, and gives the reasons which forced the abandonment of the original design, and led to the adoption of the system which has been actually pursued in the preparation of the present volume; he also gives copies of the various forms of blank return which were furnished to medical officers in the field and in hospitals, in order to secure full and accurate accounts of cases; describes the system of recording employed in the medical department of the Confederate Army—judicious use has been made of such Confederate records as came into the possession of the government during the war or at its termination—and adds that frequent reference has been made to the published reports of the various modern European wars which have occurred before or since our own.

In arranging the material with which he has had to deal, Dr. Otis has proceeded from particulars to generals, beginning with an account of special wounds and injuries, and reserving, for another volume, remarks upon the relative frequency of wounds according to regions, and upon the influence of climate and other hygienic conditions on the results of wounds, with such other general observations as may arise from a consideration of the whole subject. In the present volume is given a chro-

nological summary of the very numerous battles and minor engagements which took place during the four years, from April, 1861, to April, 1865, with the number of killed, wounded, and missing on either side, and the surgical history proper is then begun and continued through five chapters, the first being devoted to wounds and injuries of the head, the second to those of the face, the third to those of the neck, the fourth to those in which injury of the spine was the most prominent lesion, and the fifth to wounds and other injuries of the chest. The various operations which have been resorted to are considered in connection with the injuries of the several regions of the body, a plan which, as the author justly remarks, though more difficult than a distinct classification, offers many advantages in the avoidance of repetitions, and in enabling the writer to present each subject as a whole. In the second volume, which, we are glad to learn, is nearly ready for the press, Dr. Otis will take up the study of the wounds and injuries of the abdomen, pelvis, and genito-urinary organs, and of the upper and lower extremities, with the subjects of amputation and excision; and in the third volume, the consideration of gunshot wounds in general, their graver complications, pyæmia, gangrene, tetanus, and secondary hemorrhage, together with those subjects, not less important to military surgeons if less interesting to their brethren in civil life, the "materia chirurgica," and the transportation and field supplies of the wounded. Some idea of the extent of material with which the author has had to deal, may be obtained from the table on page xxv of the Introduction, from which it appears that, excluding all casualties which terminated fatally on the battle-field, the cases of injury recorded in the Union army from May, 1861, to June, 1865, numbered 408,072, and that 37,531 of these cases ended in death. Referring to the classification adopted in recording the clinical histories of this multitude of cases, Dr. Otis says:—

"It was simply a nomenclature for a series of blank books, in which surgical facts derived from a variety of sources might be entered for facility of reference, and has been modified as frequently as convenience dictated. It has been found to answer the purpose for which it was intended reasonably well."

In a foot-note consideration is given to Prof. Longmore's criticisms upon this classification (See *Medico-Chirurgical Transactions*, vol. liv. pp. 219 *et seq.*, and *No. of this Journal* for July, 1872, p. 199), and, after showing the gross inaccuracy of Prof. L.'s Arabian-Nights'-Entertainment-like account of the enormous clerical force supposed to be employed in our American Surgeon-General's office,¹ Dr. Otis adds:—

"I will not complain of the unfairness of contrasting the results of the preliminary report in *Circular No. 6*, with the perfected histories of Dr. Matthew and M. Chenu; but I do complain of an 'American system' being described and unfavourably contrasted with the classification of Inspector-General Taylor, when, as I have shown, there was no complete series of surgical reports in the army of the United States, and information was, of necessity, to be derived from heterogeneous data. 'The surgeons in the field on the American system . . . make no distinction between the various kinds of cranial fractures . . . where all such injuries are tabulated together, as they are in the primary American returns, what useful information can be obtained from a table showing, for example, the results of the operation of

¹ Prof. Longmore has evidently been victimized by one of those "perfectly reliable gentlemen" who were in the habit of supplying the American public with startling military news during the late war.

trephining? ([Longmore, *loc. cit.*] p. 240.) I cordially concur in the warm praise accorded to the histories of the Crimean and Italian campaigns by M. Chenu. I will observe that in his latter work he very materially modifies the classification employed in the former. In the history of the surgery of the Italian war, he reports nine cases of trephining; in his Crimean history Dr. Matthew reports twenty-six cases. I shall record two hundred and twenty cases,¹ and shall be disappointed if their results afford no useful information. Dr. Taylor's classification may be excellent for the British army with its corps of trained medical officers; it could not have been advantageously introduced in our service, chiefly attended by surgeons hastily called from civil life. Dr. Longmore says (p. 235), that in Germany 'no fixed classification exists.' This is quite true, yet the statistical work of General-Artz Dr. Loeffler is a marvel of accuracy and completeness to those who occupy themselves with these studies; and the extended treatises of Drs. H. Fischer, Socin, and Klebs, following so soon upon the conclusion of the Franco-German war, are monuments of well-directed industry. I think that in war 'systems' must be made to conform to the exigencies of the occasion, and to national habits and organizations. There are certain great rules to which all nations will conform; the details must be adapted to varying circumstances. The British system may be best for Britain, but not necessarily for all other countries. On peut être plus sage qu'un gens, mais point que tous les gens."

Dr. Otis concludes his introduction by giving mournfully long lists of the casualties among medical officers during the war: beside all those who perished from disease or exposure, there were no less than nineteen surgeons of the Union army killed in action; thirteen were, while in the discharge of their duty, killed by partisan troops or assassinated by guerrillas or rioters; eight died of wounds received in action; nine died from accidents met with in the line of duty; and seventy-three were more or less severely though not fatally wounded in battle.

Turning now to the surgical history itself, we begin our examination of Chapter I, which treats of "WOUNDS AND INJURIES OF THE HEAD," and which, though occupying no less than 320 pages, is even yet not complete, many of the general observations, and notably the discussion as to the applicability of the trephine in military surgery, being reserved for a subsequent volume. Injuries of the head are classified by Dr. Otis in three categories, the *first* embracing incised and punctured wounds, such as sabre-cuts, bayonet-stabs, and sword-thrusts; the *second*, injuries from falls, blows from blunt weapons, and the results of various accidents; and the *third*, gunshot wounds.

Incised and Punctured Wounds.—Brief abstracts are given of the histories of 282 cases of *incised wound of the scalp*, only six cases having terminated fatally, and the injuries received having been the direct cause of death in only three instances. The treatment employed seems to have corresponded pretty closely with that resorted to by civil surgeons, the parts adjoining the wound having been denuded of hair, and the edges then approximated, after the removal of foreign bodies, with strips of adhesive plaster. Sutures were employed in a few instances without ill result, but, as justly remarked by Dr. Otis, though probably less dangerous than has been commonly supposed, they are rarely indispensable. In no case were ligatures employed, compression having been invariably found adequate to control hemorrhage. With regard to the constitutional and hygienic treatment of scalp wounds, Dr. Otis draws a judicious distinction between the depletory and spoliative measures recommended by our ancestors (which he properly repudiates), and the rational and conservative

¹ Actually, 229 cases.—REVIEWER.

plan of enforcing rest and quietness, and of withholding unsuitable articles of food and drink.

Forty-nine cases are recorded, in which the *skull* was fractured by a sabre or other cutting weapon :—

“They furnish illustrations of all the varieties of such injuries : the superficial marking of the outer table, the division of the outer table and diploe, the section of both tables and more or less profound penetration of the cranial cavity, and the separation of an osseous flap.”

Of the forty-nine cases, thirteen proved fatal, death resulting in ten instances from intracranial inflammation or compression, in one from epilepsy, in one from tetanus, and in one from pyæmia. Removal of fragments was effected in eleven cases, of which only one resulted disastrously—thus confirming the observation long since made by Grima, that the greatest comminution of the skull is often attended with the least injury of the brain. The prognosis in cases of incised fracture appears to vary in a marked manner with the particular part of the skull affected : the statistics here collected corroborate the doctrine of Hennen and Boyer, that sabre-wounds of the top of the head are much less dangerous than those of its lateral portions. Dr. Otis appends to this section a learned and most interesting discussion (which want of space alone prevents our quoting at length) as to the proper treatment to be pursued when parts of the skull are sliced away, and the detached fragments adhere to flaps of integument which have not been completely separated from the rest of the scalp. Authorities seem to be nearly equally divided upon this question, but from a careful examination of the recorded facts, and from mature consideration of the whole subject, Dr. Otis concludes that, although the dangers likely to result, from allowing the flap of bone which adheres to the scalp to remain, have probably been exaggerated, yet that it is, upon the whole, safer to remove the osseous fragment, if it can be readily detached. All portions of the scalp itself should of course be preserved, as its vitality is great and reunion will often occur under what are apparently the most unfavourable circumstances.

The consideration of this part of the subject is concluded by giving a brief record of twenty-eight cases of *incised scalp wound* (one fatal) produced by various weapons other than those legitimately used in warfare.

Punctured wounds of the head are represented by eighteen cases of *punctured scalp wound*, of which two terminated in death, and by six cases of *punctured fracture of the cranium*, of which all but one ended fatally, the survivor in the one favourable case being moreover permanently disabled. These facts aptly illustrate the maxim that in cases of punctured fracture of the skull, the diagnosis is difficult, the prognosis gloomy, and the treatment unsatisfactory. With regard to the latter, Dr. Otis judiciously advises that operative interference should not be resorted to until it is certain that the brain or its membranes are actually implicated.

Miscellaneous Injuries.—In this section are considered those injuries of the head which are met with in military as in civil life, but which are not inflicted by weapons of warfare. A large number of cases are reported of contusion or laceration of the scalp, fracture of the skull, concussion of the brain, etc., produced by railway accidents, by falls, by blows, by kicks from horses, and by other similar causes. Five hundred and eight cases, in all, are recorded in this section ; in 331 the soft parts alone were injured, and all of these terminated in recovery ; in 72 the brain was injured though the skull was not broken, death ensuing in 14 of these cases, and

53 patients being discharged for disability ; while in 105 cases the skull was fractured, and in 57 of these death resulted. The trephine was employed in 18 cases, but in 10 of these unsuccessfully.

The treatment employed in scalp injuries appears to have been generally judicious, though in a few instances effusions of blood were prematurely cut into, with the natural effect of inducing undue inflammation and unhealthy suppuration.

"Concussion of the brain" was observed in a number of instances, and in fourteen cases which terminated in death was the alleged cause of the fatal issue ; but none of these cases, says Dr. Otis, "throw any light upon the functional or textural alterations of the brain resulting from this shock, but leave the subject, which has perplexed pathologists for so many centuries, as inscrutable as ever." We must add that none of these cases tend to shake the belief which we have long entertained, that there is no definite pathological condition to which the term "concussion" can with any propriety be applied, and that the term itself should be abandoned except as indicating the cause of what have been described by Hewett and others as "concussion lesions." The total number of cases recorded during the war as concussion of the brain from causes other than gunshot, appears from a table given on page 66 to have been 922, of which number 215 cases terminated fatally.

Of the 105 cases of fractured skull recorded in this section, 46 are known to have been examples of simple, and 43 of compound, fracture. Of the whole number 19 recovered completely, 29 recovered partially, and 57 died ; the causes of death were, compression by bone fragments and intracranial hemorrhage, each in 16 cases, encephalitis in 10, abscess of the brain in 6, cerebral laceration in 5, shock and "concussion" in 2, and epilepsy and "hernia cerebri" each in 1. The mortality of fractures at the base of the skull was almost double that of fractures of the vault. There were no instances of fracture limited to the internal table, and but two or three of fracture confined to the external table of the skull. Watery discharges from the ear were observed in two cases. In three, fracture of the base of the skull was supposed to have been caused by *contre-coup*.

"In 79 cases of fracture of the skull treated without operative interference, the death-rate was 54.4 ; of 26 cases operated upon, the ultimate results are ascertained in 23, in which the mortality-rate was 60.8."

Gunshot Wounds.—The number of recorded cases of *gunshot wound of the scalp* is so large that Dr. Otis merely gives them in the form of a tabular statement, supplementing the table by brief details of the fatal and complicated cases. The total number is 7739, of which 162 are known to have terminated fatally. In 30 instances death appears to have resulted from encephalitis, although no primary lesion of the skull was observed by the surgeons by whom the patients were treated. The occurrence of erysipelas was noted in only 22 cases, of which 8 proved fatal through the supervention of meningeal inflammation. Gangrene was observed in but 9 cases, of which 4 ended fatally. Primary hemorrhage was very rarely a serious complication, but secondary hemorrhage was more common ; 21 cases in all are recorded, of which 2 proved fatal, and in 8 of which it was necessary to resort to ligation of the bleeding vessel. Tetanus was the cause of death in five cases, and in one instance was supposed to have been cured by the inhalation of chloroform ; but, as Dr. Otis justly remarks, in this case "the evidence is anything but satisfactory." Pyæmia was observed in five cases (all fatal), and in twelve cases death was attributed to "typhoid

fever," a term which Dr. Otis tells us "was often employed in a very loose sense by some of the medical officers [it is, we may add, similarly employed by too many civil surgeons], being applied not infrequently to a state of exhaustion resulting from irritation or traumatic fever." Malarial fever is given as the cause of death in four cases, and pneumonia in thirteen; but Dr. Otis suspects, with great reason, that in some at least of the cases in each category a pyæmic condition was the real cause of the fatal issue. The remaining causes of death were various intercurrent affections, such as smallpox, diarrhœa, diphtheria, etc. The treatment adopted by our surgeons in cases of gunshot scalp wound seems to have been usually simple and judicious, though in some few instances sutures were employed, with what possible object can only be conjectured.

Gunshot contusion of the skull was observed in 328 patients, of whom 55 died, 100 were returned to duty, and 173 were discharged from service; of the latter, 75 may fairly be added to the list of those who recovered. Complications were observed in a number of cases; thus hemorrhage occurred in five instances (two primary, three secondary), in one of which ligation was found necessary, erysipelas in ten cases (one fatal), gangrene in two, and deep burrowing of pus in six cases. Periostitis, following contusion of the cranial bones, occasionally gave rise to caries, and not seldom to necrosis, leading to the exfoliation of more or less considerable portions of the skull in thirty-seven cases, of which five proved fatal. Localized and persistent pain was observed in ten cases, but in none of these was it thought right to resort to operative interference. Dr. Otis has carefully examined more than forty skulls contused by gunshot projectiles, without finding a single example of that local hyperostosis which has been described as a frequent result of this form of violence; in two instances there was abnormal thickening, but in these cases the patients died so soon after the reception of their wounds as to make it probable that the morbid condition was antecedent to, rather than caused by, the injury. The Army Medical Museum, however, contains three specimens of chronic thickening of the cranium resulting from contusions produced by falls or blows.

The causes of death in the fifty-five fatal cases of gunshot contusion, were external hemorrhage in two, tetanus, pyæmia, typhoid fever, and dysentery, each in one; cerebral compression from intracranial hemorrhage or suppuration in seventeen; and meningitis or other secondary lesions of the encephalon in thirty-two. Among the patients who survived, various nervous affections were observed, such as vertigo, epilepsy, paralysis, aphasia, and impairment of the special senses or mental faculties.

"Of sixteen cases of operative interference, four only had a favourable termination, and these were examples of the secondary removal of exfoliated fragments, Art serving as the handmaid of Nature, who had already nearly effected a cure. In the twelve remaining fatal cases, in which formal trephining was resorted to, pus was found between the skull and dura mater in four instances, beneath the dura mater in one case, and in the substance of the brain in one. In two instances it is alleged that intracranial extravasation was observed; in another that arachnitis was present; in three cases the causes of the symptoms of compression were not specified. . . . The patients survived the operations on an average about three days."

Gunshot fracture of the external table of the skull, without injury to the internal table, has been reported as having occurred in a number of cases; but, excepting fractures of the outer wall of the frontal sinus, or of the mastoid and zygomatic processes of the temporal bone, and instances of grooving of the outer table of the cranial vault by fragments of shell, there

are no specimens in the Army Medical Museum which furnish satisfactory examples of this form of injury. The whole number of cases of fracture of the external table reported is 138, and 12 of these proved fatal, though in only 10 instances was death attributable to the injury received. After a careful examination of the facts in each case, Dr. Otis is disinclined to admit that (with such exceptions as have already been indicated) "the outer table of the skull is ever fractured in the adult without injury to the inner table, either by projectiles of war or any other external violence." We are disposed to think that the addition of the last five words makes this rule too absolute, and indeed we observe that, in a previous part of the volume, Dr. Otis has himself admitted as genuine, reported cases of fracture of the external table of the parietal bone, the result of blows from sabres.

Twenty cases are recorded of *gunshot fracture of the internal table of the skull* without fracture or depression of the outer table. Of these, all but one (Dr. Bellows's case) proved fatal, the diagnosis in that instance having been verified by the exfoliation of a sequestrum involving the whole thickness of the skull, and showing that, while the external table had escaped injury, the internal was the seat of a depressed fracture. Dr. Otis introduces in this section a most learned and interesting disquisition, in which he reviews in an exhaustive manner the literature of this rare form of injury, and ably discusses the mechanism of its production, giving due credit to Teevan, of London, for having by experimental inquiry first demonstrated the true mode in which this form of fracture occurs. The diagnosis of fracture of the inner table of the skull must always be difficult during the life of the patient, though Stromeyer, following Lanfrancus, Paré, La Motte, and Atthalen, believes that the lesion may sometimes be recognized by percussion, the resonance at the seat of fracture being of elevated pitch and somewhat resembling the "cracked-pot sound" observed in certain affections of the chest. This difficulty of diagnosis Stromeyer considers "lucky for the patient, because thereby he escapes the danger of being trepanned." Dr. Otis, on the other hand, thinks the use of the trephine "undeniably justifiable" in the event of the persistence of urgent symptoms of compression, and particularly if there is paralysis of the side opposite to that of the injury. It is to be remembered, however, that while, as Dr. Otis justly remarks, "it cannot be doubted that many cases of this form of injury terminate favourably and are never recognized," eight out of twelve (misprinted in the text as eleven) cases here reported or referred to, in which trephining was practised, proved fatal, while the only patient who is positively known to have recovered from this injury during our war was not trephined. Hence, in view of the difficulty of diagnosis, and of the impossibility in most instances of determining to what condition the symptoms of compression and paralysis are actually due, the number of cases in which operative interference would be justifiable must, it seems to us, be extremely limited.

So many cases of *gunshot fracture of both tables of the skull* were reported during the war, that Dr. Otis has found it practicable to give abstracts of only the more interesting examples of each variety, with brief notes of others, and tabular statements of the whole number recorded. Of *linear or capillary fissure* there were reported nineteen cases, of which twelve ended favourably, while seven terminated in death. Dr. Otis, however, has not been able to satisfy himself of the correctness of the diagnosis in any of these cases, and suspects that in each there was more or less

injury of the cranial contents, with depression of the inner table, a condition which was actually found to exist in those of the fatal cases in which autopsies were made. In many instances both tables of the skull were broken *without there being any depression of fragments*; in some cases, by the oblique impact of balls or pieces of shell, considerable portions of bone were detached; in other cases bits of lead were clipped off from glancing balls and embedded; while in other cases, again, larger portions, or even entire balls, lodged in the diploe, or in the frontal or mastoid sinuses.

Gunshot depressed fractures of the skull were very numerous, and presented examples of every variety of the injury which has been described by military surgeons. Thus there were fissures of the external with extensive splintering of the internal table, punctured fractures, depressed fractures with long fissures radiating in various directions, etc. In many cases balls were split upon the cranial bones, the missiles sometimes remaining astride of a sharp edge of bone, and at other times separating into halves, one of which penetrated the cranium while the other flew off or perhaps lodged beneath the integument or aponeuroses. Caries or necrosis, exfoliation of sequestra, paralysis, epilepsy, loss of sight, of hearing, or of taste, and various other nervous affections, were among the sequelæ observed in these cases.

Penetrating gunshot fractures of the skull were of frequent occurrence. In many instances balls lodged within the cranial cavity, and in a number of cases attempts at extraction were made, usually without avail, but occasionally with gratifying success. *Perforating gunshot fractures of the skull* were also often observed, and in fourteen cases the patients survived, though totally and permanently disabled. *Crash or smash* is the expressive title given by Dr. Otis to those cases of depressed fracture of the skull which were produced by the impact of cannon balls, or by the explosion of large shells, and which were commonly attended with great comminution and disjunction of the sutures, invariably proving fatal, if not immediately, at least within a very few days. Not many cases of this nature are related, as from their speedy termination they present comparatively few points of surgical interest.

Numerous cases are recorded in which, without formally resorting to the operation of trephining, *fragments of bone were removed* after gunshot fracture of the skull. In a good many instances more or less complete recovery was thus secured, but in other cases the patients, though surviving, became epileptic or insane, or suffered from various nervous affections, such as partial paralysis, headache, want of co-ordinating power over the muscles, or impairment of one or more of the special senses. Erysipelas (as in all cases of head injury during the war) was comparatively seldom met with, as were gangrene and pyæmia, though each of the latter led to a fatal result in several instances. Beside the causes of death just mentioned the chief sources of mortality in the fatal cases were intracranial or external hemorrhage, meningitis, cerebritis, and intracranial suppuration.

The question of the value of *trephining*, in cases of gunshot injury of the head, is justly considered by Dr. Otis so important, that he has taken pains to record all the facts relating to the subject that have been reported, and to detail all the accounts of formal operations of the kind performed during the war, which he has been able to collect. Beside the cases which have already been considered (of trephining for contusion of the skull,

etc.), there are here given 95 cases of trephining for gunshot fracture, which proved fatal; 24 which resulted in recovery with various degrees of disability; 15 in which the patients recovered sufficiently to resume their military duties; 4 in which the patients were placed on modified duty in the Veteran Reserve Corps; 6 in which the patients were exchanged, paroled, or furloughed, and 36 cases in which the patients were discharged from service. As we have already mentioned, Dr. Otis has not yet published his own conclusions as to the applicability of the trephine in military surgery, and comments on the facts which he has detailed would therefore be at the present time premature.

Hernia cerebri was reported as existing in a number of cases, of which 51 are here given in detail; but 8 of the 44 which proved fatal are considered by Dr. Otis to have been simply examples of primary protrusion of brain matter from extensive gunshot fractures, and only 36 to have been illustrations of what is properly described as fungus or hernia cerebri. In 4 of the 51 cases trephining was resorted to, and projectiles were extracted in an equal number; in 25 cases, without formal trephining, fragments of bone were removed. From page 318 we learn that the whole number of cases of hernia cerebri was 61, of which only 11 terminated in recovery.

Fracture by contre-coup is the subject of several interesting paragraphs in which Dr. Otis analyzes the various cases occurring during the war, which were supposed to be examples of this kind of injury. This portion of the volume possesses a melancholy interest for all citizens of the United States, for in the case given on page 305, every reader will at once recognize that of our murdered President, the lamented Lincoln. We would direct Dr. Otis's attention to what is obviously a misprint in the account of the symptoms: "Over the *left* eyelid," it is said, "there was slight ecchymosis. The pupil of *that* eye was slightly dilated, the *left* pupil was contracted; both were irresponsive to light." The importance of this case from a historical point of view is so great, that we hope the ambiguity in the sentences quoted will be removed by a note in the next volume of the history. The most remarkable pathological feature of President Lincoln's case was the fact that both orbital plates of the frontal bone were fractured, the fragments being pushed *upwards* towards the brain, while the ball, which had entered through the occipital bone, was found lodged in the brain above but not in contact with the broken orbital plates. The latter were regarded as having been fractured by *contre-coup*, but Dr. Otis, adopting the suggestion of Prof. Longmore, considers it a more plausible explanation, that the force of the ball's impulse was transmitted directly through the cerebral mass itself, and accounts for the peculiar displacement of the orbital plates by supposing that they were pushed upwards by the pressure of the blood extravasated within the orbits. With due diffidence we must confess that we are not satisfied as to the correctness of this theory, and venture to express the opinion that the true explanation of the lesion in question is somewhat different. With regard to the subject of *contre-coup*, it has always seemed to us that a great deal of unnecessary confusion is created by the want of agreement among surgical writers, as to precisely what is to be understood by the term; if the word is to be used in its most limited sense, as applying solely to an isolated fracture, caused by violence applied to a part diametrically opposite to the point of injury, probably the orbital fracture in President's Lincoln's case may not, as Prof. Longmore remarks, be regarded as a fracture by counter-stroke; but, on the other hand, if the

word is to be used in a broader sense,¹ as applying to an isolated² fracture caused by transmitted or indirect violence, the lesion being at a distance from the point at which the injury is received, then President Lincoln's case affords as fair an example of fracture by *contre-coup* as can be asked for.

The true explanation of this case is, we believe, to be found in a study of the considerations advanced by Saucerote, Sabouraut, Chopart, and Delpech, in their writings on the subject of *contre-coup*, which considerations, though not in fashion with modern pathologists, have always seemed to us eminently reasonable. The theory which was propounded by the writers referred to, is, as is well known, that the skull (like any other spherical or ellipsoidal hollow body) undergoes, when struck, certain changes in shape, the diameter corresponding to the point of impact being first shortened while the transverse diameter is lengthened, and being subsequently lengthened while the transverse diameter is shortened, these alternate oscillations in form continuing until the force of the blow has been exhausted, when the parts return to a state of rest. Now, the first effect of a ball striking the occipital bone (as in President Lincoln's case) would be, according to this theory, to shorten the antero-posterior diameter of the skull, and lengthen the lateral diameters, drawing all parts in front (including the orbital plates) *inwards toward the brain*, and pressing the lateral portions outward. But bearing in mind that in cases of fracture by transmitted violence the weakest parts always give way—the orbital plates in this instance were, according to Dr. Otis, "unusually thin"—and bearing in mind Teevan's rule, that fracture invariably begins in the line of extension, what should we expect but that the weakest parts (the unusually thin orbital plates) should yield, and that they should yield in the line of extension, viz., inwards toward the brain; and this is precisely what was found in President Lincoln's case after death. This explanation (which is merely an application of the old doctrine of *contre-coup*), seems to us, upon the whole, more satisfactory than Dr. Otis's theory of displacement by the pressure of blood extravasated within the orbits. As to the fracturing impulse being transmitted through the cerebral pulp, we confess that it seems to us much more probable that the force should pass around through the walls of the skull itself; the brain mass, measurably approximating in structure to a fluid, would, we should suppose, tend to diffuse force equally in all directions, rather than to transmit it with such concentration as to lead to the occurrence of fracture.

Dr. Otis quotes from Prof. Longmore an account of a somewhat similar case, in which a gunshot fracture of the left *parietal* bone was accompanied by fracture of the left orbital plate, and, we may add, gives on page 49 another analogous instance, in which an isolated fracture of the right orbital plate accompanied fractures of the right *temporal*, *sphenoid*, and *frontal* bones, not due, however, to gunshot injury.

The chapter on head injuries is terminated by a *summary* which includes

¹ This is the sense in which the term was used by Grima, Saucerote, Sabouraut, Chopart, David (writing under the name of Bazille), and others of the older writers. (See *Mém. sur les sujets proposées pour les prix de l'Académie Royale de Chirurgie*, t. iv., and David's essay, also translated in *Justamond's Surgical Tracts*, London, 1789, pp. 241-313.)

² We say an *isolated* fracture, because the ordinary fractures of the base of the skull have been shown by Aran and Hewett to be invariably accompanied by fissures reaching into the vault, and, therefore (as justly remarked by Saucerote), rather prolonged fractures than fractures by *contre-coup*.

three tables giving (1) the results of 4350 gunshot injuries of the cranium reported during the war of the Rebellion, (2) the nature and results of 12,980 injuries of the head from all causes as reported during the war, and (3) the results of 911 cases of injury of the skull in which operations were performed. We transcribe the latter table for the benefit of our readers.

Operations.	Cases.	Recoveries.	Deaths.	Undetermined.	Ratio of mortality.	Remarks.
Extraction of missiles	175	89	83	3	48.3	The missiles extracted from beneath the scalp or soft parts are not reckoned in this table.
Ligations	33	21	12	...	36.3	
Removal of bone splinters or elevation of depressed bone	454	275	176	3	39.0	
Formal trepanning ¹	220	95	124	1	56.6	
Operations for hernia cerebri	29	7	22	...	75.8	

Of 2911 cases of fracture of the skull without known depression, 1085 terminated in recovery, operations of one kind or another having been performed in 262 instances, and non-operative treatment having been employed in the remaining 823. From the reports of the pension office, the subsequent condition of a number of the survivors has been ascertained, and, as might be expected, in many instances the pensioners suffer from persistent headache, vertigo, or other nervous manifestations.

As may be seen from the preceding table, *ligations of arteries* were practised in 33 cases of injury of the skull. The *common carotid* was tied in seven instances, four times on the left side (with one death), and three times on the right side, all of these cases proving fatal. The same vessel was tied 54 times in cases of face wound, and 23 times in cases of wound of the neck or spine, giving a total of 84 examples of this operation, with 63 deaths, or a mortality of 75 (misprinted as 76.8) per cent. The other instances of ligation in cases of head injury, which call for notice, are one of the *external carotid* (unsuccessful), and twenty-two of the *superficial temporal*, of which five proved fatal—two of the latter from hemorrhage.

In 186 cases, *balls penetrated the cranial cavity*; in 85 instances the foreign body was removed, with 43 recoveries and 42 deaths, while in 101 cases the foreign body was not removed, only 42 of these ending in recovery, while 59 proved fatal. These figures, however, must not be taken to justify reckless hunting after balls lodged in the brain; for it is quite possible that some cases which ended in death after unsuccessful efforts had been made to extract the foreign body, might have terminated differently had no interference whatever been attempted; we believe that Brodie's rule upon this subject is a sound one, that it is better even to allow a foreign body to remain, than to increase the irritation of the brain by injudicious efforts at removal.

Beside the 220 cases of *trephining* included in the table which we have quoted, Dr. Otis has collected, since that table was printed, nine others, of which six ended in recovery and two in death, the ultimate result of one not having been ascertained; the death-rate of terminated cases is thus reduced to 55.5 per cent. The dates of operation are known in 162 cases of trephining for the results of gunshot injury; 46 were cases of primary operation,

¹ Nine additional cases are afterwards reported.—REVIEWER.

with 32 deaths (69.6 per cent.), 99 of intermediary operation, with 56 deaths (56.6 per cent.), and 17 of secondary operation, with 4 deaths (23.5 per cent.). It thus appears that in trephining, unlike amputation and excision, the chances of recovery are better (other things being equal) the longer the operation is postponed; a strong argument, it seems to us, against the use of the trephine as a prophylactic against complications which may perhaps never arise. Dr. Otis corrects, in a foot-note, a statement which was made in the well-known Circular No. 6, to the effect that

“‘Surgeon D. W. Bliss, U. S. V., alone has reported eleven successes after the use of the elevator, or trephine.’ It is true,” adds Dr. Otis, “that Dr. Bliss has reported eleven cases, but I find on examining them that his success, though gratifying, was not uniform. Doubtless his success was overestimated, as, subsequently, in regard to the efficacy of *cundurango* in cancer, from reporting cases before the cures were confirmed. He had eleven cases of trephining, with six recoveries, . . . besides four cases of removal of fragments, . . . or fifteen cases, with eight recoveries.”

In thus terminating our examination of Chapter I., we feel that we in no degree overestimate its value when we pronounce it the most valuable single contribution which has ever been made to the subject of Injuries of the Head.

Chapter II. is devoted to a consideration of “WOUNDS AND INJURIES OF THE FACE,” and, like its predecessor, is divided into three sections, treating respectively of (1) incised, punctured, lacerated, and miscellaneous wounds; (2) gunshot wounds; and (3) plastic operations for deformities resulting from wounds and injuries of the face.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Several hundred cases are grouped under this heading, but only a few are considered of sufficient interest to be separately recorded. The most serious cases belonging to this class were those of burn or scald, which are, however, reserved for future consideration. *Sword wounds* of the face were met with in 37 cases; 28 patients returned to duty, three were discharged, one was exchanged, one deserted, one died, and three are not accounted for. *Bayonet wounds* were observed in 27 instances; 11 patients returned to duty, 11 were discharged, one died, and four are not accounted for. *Fractures of the bones of the face* were observed in 64 cases, of which three proved fatal, as did likewise three out of 271 cases of wounds or contusions of various kinds which are classed together as *miscellaneous injuries*.

Gunshot Wounds.—Gunshot injuries of the face, though of a serious nature on account of the great deformity to which they often give rise, are not attended with a very high rate of mortality. Dr. Otis has classified the cases recorded during the war, according to the part affected, and considers first *gunshot wounds of the orbital region*. In 63 cases the sight of both eyes was destroyed by gunshot injury, and 17 of these cases terminated fatally; in 825 cases the sight of one eye was destroyed, and in 47 of these death resulted from implication of the brain or large vessels. In 91 instances in which one eye was destroyed, the sight of the remaining became sympathetically affected. The total number of cases of gunshot wound of the eye recorded (excluding cases of powder burn, etc.), was 1190, of which 64 terminated in death; 379 patients recovered sufficiently to return to duty, and 679 were discharged, while the ultimate result in the remaining 68 cases has not been ascertained.

“The percentage of recovery, where a single eye was torn from its socket by a bullet, was large, and the secondary lesions of the brain or of the opposite

eye were less frequent, after this rude mode of extirpation, than in cases in which buckshot or small pistol-balls lodged within the globe."

As may be supposed, the eyelids rarely escaped injury when the eye was wounded, and entropion or ectropion, anchyloblepharon, and symblepharon, were frequent sequelæ in this class of cases. The eye was seldom destroyed without the orbital walls being injured, but unless the fractures in such cases extended to the cranial cavity, the results were seldom fatal.

"There was no carefully reported case of amaurosis induced by the division of the supra-orbital nerve by balls, and nothing in the reports to sanction the assertion of Mackenzie that the 'wind of a ball has been known to produce amaurosis.' The 'wind of balls,'" pointedly adds Dr. Otis, "has long been wafted out of the domain of military surgery."

Traumatic cataract not unfrequently followed gunshot contusion of the eye.

From a general survey of all the cases reported during the war, Dr. Otis justly concludes that, whenever foreign bodies are lodged in the globe of the eye, they should be extracted at all hazards, and that, if extraction cannot be accomplished, the globe itself should be extirpated in order to preserve the other eye. When panophthalmitis follows a gunshot injury, a free transverse incision should be made to evacuate the contents of the eyeball.

This section is terminated with abstracts of 138 cases of *gunshot fracture of the facial bones*, 57 of these cases having terminated fatally. Secondary hemorrhage supervened in 76 instances, and the common carotid artery was tied 13 times with five recoveries.

Plastic Operations.—In this section are given the histories of thirty cases in which plastic operations of greater or less magnitude were performed by Drs. J. C. McKee, U. S. A.; Buck, Sands, and Gouley, of New York; Keen, Judson, and Grove, of this city; the late G. C. Blackman, of Cincinnati; Culbertson, of Zanesville, Ohio; the late C. B. Gibson, of Richmond, Va., and other surgeons. Many of these cases are of much intrinsic interest, and all are deserving of study by those who pay special attention to plastic surgery; but the space already occupied by this review and the amount of material yet to be considered, warn us to pass on to other subjects.

This chapter concludes with a *summary*, giving tables of (1) 3312 cases of gunshot fracture of the facial bones,¹ of which 340 proved fatal; (2) 4914 cases of gunshot wound of the face, without known fracture, of which only 58 proved fatal; (3) 9815 cases of injury of the face from all causes, of which 470 proved fatal; and (4) 671 cases in which operations were performed, of which 80 proved fatal.

Wounds of the ear were seldom of sufficient importance to be regarded as worthy of detailed record; in seven instances the auricle was completely carried away by large projectiles, and in two cases great mutilation was produced by musket-balls, but in none of the nine cases does there appear to have been any impairment of the power of hearing. *Wounds of the nose* were of importance, chiefly from the disfiguring deformity to which they were apt to give rise—the contraction of the nostrils and depression of the nasal bridge, bearing sometimes, as pointed out by Dr. Otis, an unpleasant resemblance to the results of constitutional syphilis. In addition to the cases of eye injury previously reported, Dr. O. gives on page 386 a

¹ The lower jaw was involved in more than one-half, and the upper jaw in nearly one-fourth of the whole number of cases.

curious case of *bayonet wound of the eye* which came under his own observation. *Wounds of the cheek* usually healed without difficulty except when the parotid duct was involved, in which case a salivary fistula often persisted and required operative interference. Local palsies, neuralgias, or spasmodic twitchings, often followed injuries of the portio dura, or of the branches of the fifth nerve. With regard to the attempt to procure primary union in cases of gunshot wound of the face, by paring the edges of the wound and bringing the parts together with sutures, as advised by Larrey (a plan which was favourably reported on by Chisolm and Michel, of the Confederate army), Dr. Otis declares that the evidence adduced to prove the efficacy of the method is inconclusive, and agrees with Légouest that such a proceeding, while unnecessary in the slighter cases, is attended with positive disadvantages in those which are of a graver character.

Wounds of the upper jaw were usually found to be serious injuries, those patients who escaped the risks of hemorrhage being often called upon to experience such complications as erysipelas or pyæmia, or suffering impaired health from prolonged suppuration and the unavoidable swallowing of decomposed secretions. Here, as elsewhere in the volume before us, Dr. Otis inveighs strongly (but, in our judgment, none too strongly) against the use, in the treatment of hemorrhage, of those abominable preparations known as Monsel's salt and Monsel's solution. Had Dr. Hammond included these vile compounds among the articles prohibited in his famous calomel and tartar-emetic order, he would, we doubt not, have saved many lives, and would thereby have deserved well of posterity.

Wounds of the lower jaw were met with three times as often as those of the upper maxilla, the mortality rate being about the same (8.3-8.1) in both cases. Very varied modes of treatment were employed, but, upon the whole, none seem to have been more satisfactory than the use of a simple pasteboard splint with oakum pad and bandage.

As already indicated, *hemorrhage*, and particularly secondary bleeding, was a common and very grave complication of wounds of the face; the whole number of cases in which the common carotid artery was tied for hemorrhage under these circumstances, was, as already mentioned, 54, and in 38 of these death is known to have resulted. In one case (of fractured lower jaw), the internal jugular vein was accidentally wounded in extracting a ball which had lodged in the neck, but, double ligatures being promptly applied, the patient recovered without any evil consequences ensuing.

In several cases considerable portions of the upper or lower jaw were successfully excised, and in a few instances it was thought advisable to resort to the operation of staphyloraphy.

Chapter III. is devoted to the study of "WOUNDS AND INJURIES OF THE NECK," of which about 5000 cases were reported during the war, exclusive of cases complicated by lesions of the face, chest, cervical spine, or great vessels—which are considered elsewhere. The chapter is divided into three sections, (1) on miscellaneous injuries, (2) on gunshot wounds, and (3) on operations.

Incised and Punctured Wounds and Miscellaneous Injuries.—In this section several instances of sabre or bayonet wound are recorded, with two remarkable cases, one of cut-throat and one of fracture of the hyoid bone; the latter possesses a certain historical interest as that of the infamous jailor Wirz. The case of cut-throat was one involving the larynx and

œsophagus, and was chiefly remarkable on account of the means adopted by the patient (who obstinately refused nourishment) to assuage his thirst:—

“From a pail of water, placed above the level of his head, he could suck through a rubber tube, by bending forward and closing the wound, a little water that was apparently swallowed; then using the tube as a syphon, he would let the water pass through the pharynx and escape through the wound. He required eight pailfuls, or twenty gallons, of water daily.”

Gunshot Wounds.—This section embraces many cases of great interest; in 136 instances, *missiles lodged* in the neck, extraction being effected in 87 cases, while in others the foreign bodies became encysted, or, more rarely, gravitated through the surrounding tissues, and thus made their way into the nearest cavity, or were spontaneously eliminated from the exterior surface. Dr. Otis narrates a curious case which came under his own observation, in which an inch and a quarter grapeshot, fired from a battery about three hundred yards distant, struck the hyoid bone, and being deflected from its course buried itself in the muscle of the right scapular region, whence it was removed; the patient did well for four days, and then died rather suddenly from œdema of the glottis.

Torticollis was observed in a large number of cases, as the result of wound of the sterno-cleido-mastoid muscle, and, as shown by the reports of pension surgeons, has been often very persistent. Stromeyer's opinion is, however, quoted, to the effect that, when the muscles alone are involved, complete recovery may ultimately be expected.

Wounds of the larynx or trachea were observed in more than 80 cases, and in many instances were followed by loss of voice, exfoliation of cartilage, and the persistence of aerial fistulæ. An interesting case is given from the records of the Confederate army, which shows that the zeal without knowledge of volunteer assistants produced as baleful effects among the Southern wounded as among our own. The victim in this instance was a corporal of a Virginia regiment, who was shot through the trachea at Spottsylvania on May 10, 1864. He was received into a Richmond hospital, and was rapidly improving, when, on the tenth day—

“Some intermeddling woman going through the hospital, thinking she would benefit the patient by renewing the dressing, and without consulting the surgeon in charge of the ward, removed the dressing, and plugged the wound with cotton saturated with turpentine. The patient, not being able to speak, was compelled to submit to this cruel treatment, which caused his death . . . before the woman who did the mischief left his bedside.”

Wounds limited to the *pharynx or œsophagus* were not very common, though these organs were implicated in many cases which proved immediately fatal from concomitant injuries of the great vessels or nerves of the neck.

Among the secondary consequences and complications of gunshot wounds of the neck, the most important were paralysis, hemorrhage, erysipelas, gangrene, and pyæmia.

Operations on the neck.—A tabular statement of the more important operations performed for gunshot wounds or other surgical affections of the neck, shows that there were 29 ligations of vessels with 22 deaths, 14 tracheotomies with 8 deaths, 6 laryngotomies with 5 deaths, 2 excisions of tonsils with no deaths, and 87 extractions of balls with 12 deaths. *Tracheotomy* was performed six times for gunshot wound, with four deaths and two recoveries. The same operation was performed twice, and *laryngotomy* four times, for œdema of the glottis, but only one of the six cases proved

successful. Three operations were performed for diphtheria, one (laryngotomy) terminating in recovery, but both the others (tracheotomy) proving fatal. Tracheotomy was performed twice, successfully, for simple laryngitis, and twice—once successfully and once without success—for apnoea resulting from quinsy, as was laryngotomy once, likewise without success. *Ligation of the common carotid artery* was performed 21 times, but only once successfully, and ligation of the third part of the *subclavian* once, with a fatal result; reference is made (page 422) to a successful ligation of the *internal jugular vein*, but the history of the case seems to have been by some oversight misplaced, and one of another character substituted. Dr. Otis, in connection with this subject, speaks with deserved praise of Dr. S. W. Gross's excellent papers on wounds of the internal jugular vein, published in the numbers of this Journal for January and April, 1867; Dr. O.'s own remarks upon this subject are reserved for a separate chapter on Venous and Arterial Hemorrhages. With regard to ligation of the carotid in cases of gunshot wound of the face or neck, Dr. Otis, after pointing out that the mortality of terminated cases during the war was 78 per cent., adds:—

"The exhibit is yet more deplorable than that of the preliminary report in *Circular 6*, S. G. O. 1865, which gave for forty-nine cases a fatality of 75 per cent., and will furnish M. Léon Lefort . . . an additional argument against the performance of this operation for traumatic causes, unless the injury involve the main trunk itself, and a ligature can be placed above and below the point of injury. Nowhere else, not even in wounds of the forearm or legs in which the brachial or femoral may have been tied, does the operation of Anel appear to greater disadvantage. Tying the common trunk for injuries of the smaller vessels of the head or neck is an operation based on a fallacious interpretation of the anatomical and physiological relations of the region. Nothing that is not corroborative of Guthrie's admirable suggestions is found in the preceding cases. If the indolent or timid surgeon, who, to control bleeding from minor branches of the carotid, prefers to stuff the wound with styptics, or to perform the easy operation of tying the common trunk, rather than to seek in the difficult anatomy of the maxillary and thyroid regions, to place double ligatures at the bleeding point, he may temporize, or may associate his name with the necrology of ligations; but if his patient recover, it will generally be found to be under circumstances in which the surgeon's operative intervention was uncalled for."

This chapter is terminated with an account of two cases of gunshot wound of the neck, in which paralysis was relieved by the removal of balls—in one instance nearly a year, and in the other nearly seven years after the date at which the injury was received. The operator in the first case was Dr. R. Fraser Michel, and in the second Dr. N. S. Lincoln. Due praise is given here, as elsewhere in the volume, to the careful investigations of Drs. Mitchell, Morehouse, and Keen, upon the subject of nerve injuries.

In Chapter IV., Dr. Otis takes up the subject of "WOUNDS AND INJURIES OF THE SPINE." The total number of cases to be considered in this chapter is about six hundred, and in his classification of them Dr. Otis adopts his customary division of his subject into three sections.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Only two cases of *incised wound* are recorded, one terminating in recovery and the other proving fatal in the fifth week from exhaustion: a *post-mortem* examination in the latter case revealed a portion of the knife-blade which inflicted the injury, broken off and embedded in the neighbourhood of the fifth dorsal vertebra. *Contusions and miscellaneous injuries* are repre-

sented by seventy-nine cases, of which six proved fatal—one from chronic peritonitis, one from smallpox, and four from vertebral fracture or luxation.

Gunshot Wounds.—Cases of gunshot injury of the vertebral column are very frequently complicated with grave lesions of the abdomen, thorax, or great vessels of the neck, and hence, in most cases, prove almost immediately fatal, the number which actually comes under treatment being therefore comparatively limited. Dr. Otis gives in detail the histories of nearly a hundred of the more interesting cases, and then sums up the whole number reported in a tabular statement which we transcribe for our readers' benefit:—

Results of Six Hundred and Forty-two Cases of Gunshot Injuries of the Vertebrae.

REGION.	Cases.	Died.	Discharged.	Duty.	Unknown.	Percentage of mortality.
Cervical	91	63	19	8	1	70.0
Dorsal	137	87	32	18		63.5
Lumbar	149	66	51	28	4	45.5
Cervical and Dorsal .	2	1	1			50.
Dorsal and Lumbar .	3	3				100.
Vertebrae not stated .	260	129	72	50	9	51.4
Aggregate	642	349	175	104	14	55.5

For purpose of comparison with the results exhibited in the above table, we have recast into a similar form the tabular view of the results in 394 cases of spinal injury (derived almost exclusively from the records of civil surgery), taken from the monograph on Injuries of the Spine¹ which was published some years since by the present reviewer:—

Results of Three Hundred and Ninety-four^a Cases of Spinal Injury.

REGION.	Cases.	Died.	Relieved or not improved.	Recovered.	Unknown.	Percentage of mortality.
Cervical	212	164	8	38	2	77.36
Dorsal	130	82	19	28	1	63.08
Lumbar	57	34	7	15	1	59.66
Not stated	19	5	6	8		26.32
Aggregate ²	418	285	40	89	4	68.18

In comparing these tables, it must be remembered that the latter includes a certain number of cases which proved instantly or almost immediately fatal, while the former embraces only such cases as survived long enough to have been actually placed under treatment. Some patients, also, who were discharged from service, might and in civil life no doubt would have been considered to have recovered, though not able to endure the hardships of a soldier's life. Making these allowances, it is interesting to observe how closely the results of spinal injuries in civil and in military

¹ Injuries of the Spine, Philadelphia, 1867, page 43.

² In this table, cases in which two regions of the spine were involved are noted under each region.

life correspond with each other, and, more especially, how uniformly the death-rate in both sets of cases varies with the particular part of the vertebral column which is affected.

The *symptoms* met with in cases of gunshot wound of the spine do not of course materially differ from those noticed in cases of spinal injury from other causes; we observe with interest that *tetanus* is said by Dr. Otis to have occurred as a complication of spine wounds in only seven instances during the war, a circumstance which confirms the opinion which we have elsewhere¹ expressed, that tetanus, if a nervous disease at all, is never primarily one of the central nervous system.

Operations.—Hemorrhage was not a frequent complication in cases of gunshot wound of the spine, during the war, and *arteries were ligated* in only four instances apart from one which has already been referred to in the chapter on Injuries of the Face. In two cases the common carotid artery was tied, in one the left subclavian (presumably for some lesion of the axillary vessels), and in one the occipital. All of the four cases terminated fatally. No instances of formal trephining of the spine were reported, but in 24 cases *fragments of vertebræ were removed*, either primarily, or as exfoliated sequestræ at a later period; ten of these cases terminated fatally, while in nine of those which ended in recovery, the spinous processes alone appear to have been injured. In 34 cases of gunshot injury of the spine *balls were extracted*, and 13 of these cases resulted unfavourably. Dr. Otis's remarks upon the operation of trephining or resection in cases of spinal injury, are very interesting and eminently judicious; he places Louis's famous operation where it properly belongs, among the extractions of loose fragments, and ends by justly declaring that

“Formal trephining of the spine has hitherto given such unfortunate results, that without much more positive favourable evidence, it cannot be accepted as an established operation.”

Chapter V., and the last of the volume before us, deals with the important subject of “WOUNDS AND INJURIES OF THE CHEST,” and, like the preceding chapters, embraces three sections, respectively devoted to (1) punctured and incised wounds and miscellaneous injuries—excluding simple fractures, etc., which are considered elsewhere, (2) gunshot wounds of the thorax and its contents, and (3) operations required by the effects of injuries in this region of the body.

Incised Wounds, Contusions, and Miscellaneous Injuries.—Nearly 300 cases are recorded in this section, viz.: nine cases of sabre wound, with one death; 29 of bayonet wound, with nine deaths; 33 of incised and punctured wounds from various weapons, with 12 deaths; and 225 of contusion from railway accidents, falls, kicks from horses, etc., with five deaths.

Gunshot Wounds of the Chest.—This section deals with the records of many thousand cases, and many of the subjects discussed in it are of the highest interest and of the greatest practical importance.

Gunshot flesh wounds of the chest were, of course, very numerous; the results have been ascertained in nearly 11,000 cases, and in only 113 was there a fatal termination—the immediate cause of death in nearly half of these having been, moreover, in no way connected with the injury. Under the head of *non-penetrating injuries of bones* are described cases in which gunshot wounds were complicated with lesions of the osseous or

¹ Op. cit., page 35.

cartilaginous parietes of the chest, without the thoracic cavity itself having been opened, or its contained viscera directly implicated in the injury. Under this head are also given three cases of gunshot fracture of the scapula, in which the cavity of the chest was not primarily opened, but which ultimately proved fatal through the supervention of pleurisy or pneumonia.

Internal injuries without external wounds were met with in 25 recorded cases, of which 14 terminated in death. These figures probably do not represent the entire number of cases, for, as justly remarked by Dr. Otis :—

“The severe contusions by large spent shot, causing ruptures of the lung and heart, or laceration and great extravasation, are fatal on the field, and very rarely come under the surgeon’s observation, while the slight concussions of the chest cavity often pass unnoticed.”

The explanation given by M. Gosselin, of the mechanism of this rare form of injury, is, we believe with Dr. Otis, more satisfactory than any other which has been suggested.

Penetrating gunshot wounds of the chest were observed, during the war, in nearly 9000 cases, of which about five-eighths proved fatal. Several interesting cases of *penetrating and perforating wounds without fracture* are narrated, and Dr. Otis then considers in succession gunshot fractures of the *clavicle*, gunshot fractures of the *scapula*, gunshot penetrating fractures of the *sternum*, gunshot fractures of the *ribs*, *complicated gunshot wounds of the lung*, and gunshot wounds of *both lungs*. With regard to the reported cases of recovery after penetration of both lungs by gunshot missiles, Dr. Otis finds that in no instance is the evidence incontestable; there is no doubt that patients thus injured may survive several (in one instance nine) days, but that recovery ever follows under these circumstances is yet open to doubt.

Seventeen pages are devoted to a consideration of Dr. Benjamin Howard’s famous plan of “*hermetically sealing*” gunshot wounds of the chest, and all the evidence on the subject that has been obtained by the Surgeon-General’s office, is here fully set forth, Dr. Otis rightly considering that it is—

“Not a work of supererogation or an unnecessary occupation of space to show conclusively that what has been bruited abroad as the *American plan* of treating gunshot penetrating wounds of the chest, was fairly tested during the war, and its indiscriminate application found to be pernicious.”

We have not space to follow Dr. Otis in his demonstration of the true merits—or rather want of merit—of Dr. Howard’s much vaunted mode of treatment, but shall merely say that while 42 patients, whose wounds were “hermetically sealed,” perished, only 27 survived, and in only 20 of these was it specified that the lung was wounded. To be sure, as remarked by Dr. Otis, this rate of mortality (60.8 per cent.) would not seem excessive if the successful cases were all actually instances of penetrating chest wound.

“But,” adds Dr. Otis, “we fear that the statistical statement is open to many criticisms. Undoubtedly there are on the pension rolls the names of thirteen patients who recovered from alleged penetrating gunshot wounds of the chest under the treatment by hermetically sealing, and have survived their injuries from seven to nine years. Only one . . . enjoys good health . . . Two of the twelve other pensioners have necrosis and empyema, and interminably open sinuses; five suffer from hæmoptysis; two have partial paralysis;

the others suffer from chronic cough, solidification of portions of the lung, dyspnoea, and other evidences of damage to the respiratory apparatus . . . With all these disabilities they still live. Of five cases, reported as rapid recoveries (from lung wounds in each instance), there are no late histories . . . There remain, of the twenty-seven reported recoveries, nine cases, two of which . . . appear to be satisfactory, while seven are open to objection. . . . It is almost incredible that Dr. M. . . . should have sent Larkin to the ranks, knowing that he had been shot through the left lung one month before, no matter how complete his convalescence might appear; yet such is the record. Captain P. . . . was discharged, and may have had the unusual generosity to waive his claim for pension; but it is so extraordinary that the six enlisted men reported to have been shot through the chest should all have failed to make application for pension, that it is difficult to avoid the conviction that either the gravity of the injuries sustained by these men was, happily, greatly exaggerated originally, or else that the men imprudently returned to duty, were killed in action, or died in captivity. In the writer's judgment, only three of the series of twenty-seven cases . . . are authenticated as complete and permanent recoveries. . . . There is reason to believe that those signs which, when several coexist, afford a strong presumption of lesion of the lung, were wanting in many of the cases, and that the diagnoses given were unwarranted. There is no doubt that, in some of the cases, threatened asphyxia from hæmothorax or empyema made it impracticable to persevere in the occlusive treatment, and that the wounds were open during convalescence. The fatality of gunshot wounds really penetrating or perforating the lung is so great, that science would have been immeasurably indebted to Dr. Howard for an improvement upon ordinary methods of dealing with these serious injuries. It is obvious that such a pretension is far from having been established; it is probable that the routine application of the plan has not been unattended by disastrous results; and it is to be lamented that the numerous experiments have not even advanced our pathological knowledge."

Hernia of the lung was observed in seven cases during the war, and in three instances is believed to have ended fatally; ligation of the protruded pulmonary tissue was resorted to in two of the successful, and in one of the unsuccessful cases.

No complication of gunshot wounds of the chest is more common, nor is any more to be dreaded, than *hemorrhage*, and, accordingly, Dr. Otis's remarks upon this subject will be read with great interest by all practical surgeons. No examples were recorded during the war of gunshot wound of the *thoracic aorta*, and if any such occurred, the patients did not survive long enough to be placed under treatment. Since the war, however, Dr. Piper has reported a case of accidental pistol-shot perforation of the aortic arch, and Dr. Lidell has recorded a case of pistol-shot wound of the aorta just beyond the semilunar valves. Dr. White has also recorded a case of bayonet wound of the thoracic aorta, which proved quickly fatal from hemorrhage. Wounds of the *descending vena cava* were observed in a few instances, and two cases have been reported since the war, one the result of gunshot injury, and the other a case of arrow wound; in the latter case the victim, though scalped and otherwise injured, survived forty hours. Wounds of the *innominate* and *subclavian arteries* were observed in several cases:—

"It is quite time," says Dr. Otis, "that the dictum of Jourdan that surgery is powerless in lesions of arteries within the cranial, thoracic, and abdominal cavities should be expunged from the text-books. At least five cases occurred during the late war, of wounds of the subclavian in which surgical intervention was justifiable, and in one of these, the left subclavian was successfully tied by a Confederate surgeon, for a wound of the vessel where it passes across the first rib."

A few examples are recorded of wounds of the *internal mammary* and *intercostal arteries*; there was but one case (and that of doubtful authenticity) of *gunshot wound of the subclavian vein*, but there are specimens in the army medical museum of *rupture* and of *bayonet wound* of that vessel. *Traumatic aneurism* was but rarely met with as a sequence of gunshot wounds of the large vessels of the thorax.

Wounds of the pericardium and heart were observed in a number of cases, some of which proved instantly fatal, while in others the patients survived for a considerable period; among the reported cases of wounded pericardium, there were indeed several recoveries, but in these the diagnosis necessarily lacked the confirmation of an autopsy. This section is terminated with brief remarks upon *cardiac diseases resulting from wounds*, gunshot wounds of the *mediastinum*, wounds of the *thoracic duct*, wounds of the *oesophagus*, wounds of the *intrathoracic nerves*, and wounds of the *diaphragm*.

Operations on the Chest.—In this section are considered ligations of the arteries of the chest, excisions of portions of the bony parietes, extractions of splinters, missiles, etc., and instances of thoracentesis.

No case of *ligation of the innominate* occurred during the war, though this vessel was wounded in several instances. Dr. Otis suggests, on theoretical but we think perfectly tenable grounds, that the proper treatment for a wound of the distal portion of the brachio-cephalic trunk would be to tie this vessel itself in its middle portion, tying also the carotid and subclavian arteries, as near their points of origin as possible, and then to amputate at the shoulder.

Ligation of the subclavian was performed in 25 cases, 20 of which proved fatal; in two instances the vessel was secured in its *first* portion, and in two in its *second* portion, or between the scaleni muscles. In 16 cases the operation was performed for hemorrhage, and in nine cases for traumatic aneurism of the axillary artery. The *right* subclavian was tied in 13, and the *left* in 12 cases. One instance of subclavian ligation was recorded in the chapter on wounds of the neck, and 26 more will be given in a future volume in considering wounds of the upper extremity, so that the total number of cases reported during the war is 52, of which 41 (78.8 per cent.) terminated fatally.

The *internal mammary artery* was tied twice without success; the *suprascapular* artery once, with success; and the *intercostal* artery eight times, with two successes and six failures. Thirteen cases of ligation of the *axillary artery* (all fatal) are also recorded, and reference is made to other cases which will be detailed when Dr. Otis comes to speak of wounds of the arm.

Excision of the clavicle was performed in eleven cases, *complete* excision having been resorted to twice (with a fatal result), and *partial* excision nine times, with five deaths and four recoveries. Partial excision of the *scapula* appears to have been performed four times with but one death, and partial excision of one or more *ribs* in thirteen cases with four deaths. Operations on the *sternum* appear to have been limited to the removal of fragments, or of sequestra separated by exfoliation. The death-rate of gunshot fracture of the sternum seems not to be very high, for of fifty-one recorded cases, but eighteen (35.3 per cent.) terminated fatally.

Thoracentesis was performed in 28 cases with nine recoveries, or, deducting eight cases of effusion from idiopathic pleurisy, in 20 cases with only four recoveries, this large death-rate (80 per cent.) indicating that

the mortality of penetrating gunshot wounds of the chest is not materially affected by the operation. *Drainage tubes* were employed in some cases of empyema, and in others free *incisions* were made into the pleural cavity, while in some instances the evacuation of foreign bodies, etc., was facilitated by the use of mild detergent *injections*.

Balls or other foreign substances were extracted from the chest in 316 cases, of which 108 proved fatal. In 41 cases the projectile was lodged beneath the soft parts, without having injured the contents of the chest; of the remaining 275 cases, 108 terminated in death, while the result in nine is unknown—159, or more than half of the whole number, being reported as instances of recovery.

“As the names of the majority are found on the pension roll, there can be little doubt of the fact of recovery; but there is every reason to believe that the gravity of the injury was overestimated, and that many cases returned as penetrating wounds of the chest, in reality were wounds of the parietes only.”

The last portion of the volume before us (but by no means the least in interest and importance) is devoted to a consideration of the *Mortality, Complications, Diagnosis, and Treatment* of wounds of the chest. The limited space remaining at our disposal compels us to hurry over this part of the book more rapidly than either its merits or our own inclination would direct, and we must content ourselves with referring to some of the more salient points which attract our attention as we turn over the pages.

Comparing the statistics of chest wounds derived from the records of our war with those derived from the records of various European wars before and since, Dr. Otis finds that it may be estimated with close approximation to accuracy, “that of those killed in battle, from one-third to one-half, and of those wounded in action, one-twelfth, receive wounds of the chest.” The *mortality* of penetrating gunshot wounds of the chest, Dr. Otis finds to have been in the Union army, 62.4 per cent., which, as shown by a table on page 608, is slightly less than the average obtained by combining the statistics of various foreign wars. These figures show clearly of how grave a character these injuries really are, and it is probable that if those cases only were considered, in which the lung itself is known to have been wounded, the death-rate would be found to be still higher.

Emphysema seems to be a less frequent complication of penetrating chest wounds than it was formerly thought to be; at least it was noted in only 38 of nearly 9000 cases recorded in this chapter. *Traumatic pleurisy*, though regarded by Mr. Erichsen, and other systematic writers, as a necessary result of penetrating wounds of the chest, is found in practice to be really a somewhat infrequent complication; so *traumatic pneumonia*, though said by the English writer quoted, to be “an invariable sequence” of lung wound, and to have “frequently a tendency to extend to some distance around the part injured,” is, in point of fact, comparatively seldom met with. Indeed there can be no doubt that Dr. Otis is quite right in declaring that—

“It is certain that pneumonia, in the ordinary acceptance of the term, is *not* an invariable sequence of wounds of the lung. It is probable that it is not a frequent sequence.”

The fact is that *pneumonia* (as met with in idiopathic cases) is something more than mere *pulmonary inflammation*; and though pathologists who hold, as we do, that all repair after injury is effected by means of inflammatory changes, must consistently believe that lung wounds are fol-

lowed by *inflammation in the track of the wound*, yet it is quite certain that *pneumonia* (as the term is used by physicians) is, upon the whole, rather an unusual complication of lung injuries, and it is probable that its occurrence, when met with, is more owing to the constitutional condition of the patient, at the time of or subsequent to the reception of the wound, than to the wound itself.

Pneumothorax, *hydrothorax*, and *hæmothorax* are each made the subject of interesting remarks, by Dr. Otis, who shows, from an examination of all the evidence on the subject, that *lumbar ecchymosis*, contrary to the doctrine of Valentin and Larrey, is really of very little value as a diagnostic sign of the presence of blood in the cavity of the pleura. *Abscesses of the lung*, due to the presence of foreign bodies, were often observed in the recorded cases of chest wound, and, more rarely, the so-called "metastatic abscesses" of pyæmia. *Thoracic fistulæ* were observed in some cases, as were *secondary emphysema* and *pneumothorax*; *erysipelas*, *gangrene*, and *tetanus* were very rarely met with as complications of chest wounds.

As regards the *diagnosis* of wounds of the lung, Dr. Otis's investigations fully confirm the opinion advanced by Fraser and others, that none of the symptoms formerly regarded as characteristic of these injuries can be considered pathognomonic, though, when several are observed in combination, they furnish strong presumptive evidence that the lung has been wounded.

The *treatment* of gunshot wounds of the chest in vogue among military surgeons, has undergone a complete revolution within a comparatively recent period: it is indeed only since 1855, when Dr. Fraser published his admirable monograph, that it has really been questioned whether the profuse bleedings recommended by the older surgeons were absolutely necessary or even desirable. The evidence adduced by Dr. Otis from the records of our late war, would seem to settle this point definitively; it may now indeed—

"Be regarded as generally admitted that venesection is unnecessary in penetrating wounds of the chest, and that it may be very harmful, and that the 'draining of the system of blood,' commended by Bell, Hennen, Guthrie, and Cooper, is to be numbered with the errors of the past."

We have thus come to the end of Dr. Otis's magnificent volume, some idea of the value of which we have striven to give our readers, however inadequately, by means of analysis and extract. The work, as we said in the beginning of this review, scarcely admits of criticism, but no critic can hesitate to declare that in every respect it reflects the highest credit upon all concerned in its production, from the Surgeon General, under whose general supervision it has been prepared, down to the printer and engraver, who are directly responsible for its mechanical execution. The book is very handsomely, and, considering the immense amount of matter which it contains, upon the whole very correctly printed; it is elegantly illustrated with thirteen highly finished chromo-lithographic plates, and over three hundred well-executed wood-cuts. There is one deficiency in this volume, which we hope to see supplied when the whole history is completed; we allude to the want of an index. The arrangement of the work is such that the information furnished upon any one subject (as, for instance, deligation of the common carotid artery) is necessarily scattered in different parts of the book, and, with merely the brief table of contents for a guide, it is often almost impossible for the student to find what he is in search of.

We sincerely trust that a most elaborate and carefully constructed index will yet be furnished; for, if it is not, the rich store of knowledge which Dr. Otis has with so much zeal and labour accumulated, will, we fear, be for most readers but buried treasure.

J. A., JR.

ART. XVIII.—*The Physiology of Man; designed to represent the existing State of Physiological Science, as applied to the Functions of the Human Body.* Vol. IV. *The Nervous System.* By AUSTIN FLINT, JR., M.D., Professor of Physiology and Physiological Anatomy in the Bellevue Hospital Medical College, New York, etc. 8vo. pp. 470. New York: D. Appleton & Co., 1872.

OUR readers will remember that three volumes of Prof. Flint's "Physiology" have already appeared, and have been critically examined in the pages of this Journal. These volumes were occupied with an account of the blood, circulation, respiration, alimentation, digestion, absorption, the lymph and chyle, secretion, excretion, the ductless glands, nutrition, animal heat, movements, voice and speech. The present volume, constituting the fourth of the series, is devoted entirely to the consideration of the Nervous System.

The whole of the first chapter is taken up with a description of the structure and chemical composition of the nerves, their branching, course, and mode of termination, and their capability of being regenerated after section or even excision of a portion of their substance. In describing the minute anatomy of nerves, Prof. Flint divides them into the simple or non-medullated, the medullated and gelatinous, following, for the most part, in his histological account, the well known observations of Robin, Kölliker, Fromman, Grandry, Schultze, Remak, and other eminent authorities in this special field of research.

The motor and sensory properties of the roots of spinal nerves, the influence exerted upon the nutrition of the posterior roots by their ganglia, the mode of action of both motor and sensory nerves, and the subject of recurrent sensibility are briefly discussed in this chapter. In this connection Dr. Flint devotes a considerable space—one-half, indeed, of the whole chapter—to a critical review of the claims of Walker, Mayo, Bell, and Magendie, as to the priority of discovery of the distinct seat of motion and sensation in the roots of spinal nerves. In a work designed to represent the existing state of physiological science, and issued as a text-book upon this science for the medical student, it was scarcely necessary to discuss this subject in such lengthened detail, especially as it had already been, as the author himself observes, correctly reviewed in the *London Medical and Physical Journal*, in 1829, by Elliotson in his *Human Physiology* in 1840, by Velpeau in 1866, and Bernard in 1867.

Chapter III. is devoted to the consideration of nervous irritability, the nature of the so-called nerve-force, and the phenomena produced by the application of electricity to the nerves. The well-known observations and experiments of Bernard and Longet upon the excitability of nerves, and the phenomena of the progressive disappearance of their irritability after excision; those of Prévost and Dumas, and of Matteucci and Longet show-

ing the non-identity of electricity and the nerve-force; those of Hirsch, Helmholtz, Baxt, Du Bois Reymond, Marey, Donders, and Schelske, on the rapidity of nervous conduction; those of Lombard and Schiff, upon the elevation of temperature in nerves during their functional activity, and those of Volta, Galvani, Matteucci, Guerard, Longet, Chauveau, Ritter, Bernard, Rousseau, Du Bois Reymond, and others, on the action of electricity in the nerves, are all set forth in a brief but very lucid manner.

In the next five chapters, comprising about one-third of the volume, Dr. Flint treats at considerable length and with much minuteness of detail of the physiological anatomy, properties, and functions of the cranial nerves.

The physiological anatomy and general properties of the spinal cord are described in the ninth chapter. The author here reproduces as the best account yet given of the minute anatomy of the cord, the distribution of its fibres and their connection with the nerve-cells, the description contributed by Gerlach to Stricker's *Handbook of Histology*. As the result of the most definite and reliable experiments and observations upon the physiological properties of the cord, he presents the following conclusions:—

“The gray substance is probably inexcitable and insensible under direct stimulation.

“The antero-lateral columns are insensible, but are excitable both on the surface and in their substance; *i. e.*, direct stimulation will produce convulsive movements in certain muscles, which movements are not reflex and are not attended with pain. The lateral columns are less excitable than the anterior columns.

“The surface, at least, of the posterior columns is very sensitive, especially near the posterior roots of the nerves. The deep portions of the posterior columns are probably insensible, except very near the origin of the nerves.

“The above conclusions refer only to the general properties of different portions of the cord, as shown by direct stimulation, in the same way that we demonstrate the general properties of the nerves in their course. In all probability, the fibres in the white and gray substance of the central nervous system conduct motor stimulus from the brain and sensory impressions to the brain, while they are themselves insensible and inexcitable under direct stimulation.”

Chapters X. and XI. are occupied with a detailed account of the action of the spinal cord as a conductor of motor impulses and sensory impressions, and as a nervous centre. It is now, thanks to the labors of Brown-Séquard, Velpeau, Phillippeaux, Longet, Van Kempen, and others, very well established that the fibres of the gray and white substance of the cord situated in front of the points of origin of the posterior roots of the nerves, and constituting what is known as the antero-lateral columns of the cord, though entirely insensible to direct irritation, serve as conductors of motor impulses from the brain to the periphery through the anterior roots of the spinal nerves. Division of these columns is followed by loss of voluntary motion in all parts below the section. If the injury be limited to the antero-lateral columns of one side, the resulting paralysis is confined to that side. When the posterior columns are divided, voluntary motion is not lost. It seems highly probable that the power of conducting motor impulses is not confined to the white substance but is also possessed by the gray. The motor conducting fibres, after decussating at the medulla oblongata and upper part of the cord, run down in the cervical region mainly in the lateral columns, and upon reaching the dorsal region pass chiefly into the anterior columns. Dr. Brown-Séquard has conclusively shown that the gray matter of the cord, especially that part surrounding the

central canal, is a conductor of impressions from the periphery to the brain. The white substance of the antero-lateral columns cannot, any longer, be regarded as conductors of sensory impressions to the brain. This is true also of the white fibres of the posterior columns, which appear to act commissurally, connecting the segments of the cord together and assisting in the co-ordination of muscular movements.

Whytt and Prochaska, in the latter part of the last century, and Legallois, Fodera, Mayo, Marshall Hall, and Müller, in the early portion of the present century, laid the foundation, by their experiments, of our present knowledge of the reflex action of the spinal cord. Whytt showed that impressions made upon the sensory nerves give rise to movements that are wholly involuntary. Prochaska declared that the motions of decapitated animals were reflex, took place without consciousness, while Legallois, Fodera, and Mayo showed that in animals in which the cord had been divided, the posterior limbs, when pinched or otherwise irritated, were thrown into motion without the animal experiencing any pain, and while the anterior limbs remained perfectly motionless.

The experiments of Marshall Hall published in 1832-33, are assumed by him to have demonstrated as follows:—

“A decapitated animal, the only part of the cerebro-spinal axis which remains being the spinal cord, will make no movements, if completely protected from all external impressions. An impression made upon the sensory nerves of a decapitated animal is reflected by the cord, through the motor nerves, to the muscles, and gives rise to reflex movements. If the cord be destroyed, no movements follow stimulation of the surface. If the centripetal and the centrifugal nerves be divided, no reflex movements can take place. Experiments upon decapitated animals accord with the results of observations upon acephalous fetuses, and in cases of complete paraplegia from injury to the cord. All of the involuntary movements observed in the healthy body are explained by the theory of reflex action.”¹

“It is easy to determine,” Dr. F. remarks, “that the muscular movements dependent upon nervous action, occurring in decapitated animals are due to the action of the spinal cord as a nerve-centre. In an animal in which the reflex phenomena are very marked, as they are after decapitation, especially if the animal be poisoned with strychnine or opium, all movements cease immediately when the cord is destroyed. That the gray matter of the cord is the part concerned as a centre in the production of these phenomena, is probable, in view of what we know with regard to the general functions and properties of this substance; and experiments have shown that this is the fact. If, in a decapitated frog, we make a longitudinal section of the cord in the median line, leaving only a slight communication between the two sides, we may sometimes succeed, by strongly irritating the skin of one leg, in producing reflex movements, not only in the same leg, but in the leg of the opposite side; and it is reasonable to suppose that the irritation is propagated from one side to the other through the cells of the gray matter.”²

The physiological division of the encephalon, and the general properties and special functions of the cerebral hemispheres, are considered in Chapter XII.

Dr. Flint maintains that the brain is not, strictly speaking, the organ of the mind, for this statement, he thinks, would imply that the mind ex-

¹ Marshall Hall, *Reflex Function of the Medulla Oblongata and Medulla Spinalis*, London, 1833; and, *Memoirs on the Nervous System*, London, 1837. Marshall Hall states that his first publication appeared in the *Proceedings of the Zoological Society*, in 1812.

² Longet, *Traité de physiologie*, Paris, 1869, tome iii., p. 260.

ists as a force independently of the brain. On the contrary, he believes that mind is produced by brain-substance, or, in other words, that intellectual force can be produced only by the transmutation of a certain amount of brain matter. With regard to the precise location of the faculty of language, a subject which has been so much discussed in treatises on aphasia, he says:—

“Taking into consideration all of the pathological facts bearing upon the subject, it seems certain that, in the great majority of persons, the organ or part presiding over the faculty of articulate language is situated at or near the third frontal convolution and the island of Reil in the left anterior lobe of the cerebrum, and mainly in the parts nourished by the middle cerebral artery. In some few instances, the organ seems to be located in the corresponding part on the right side. It is possible that, originally, both sides preside over speech, and the superiority of the left lobe of the brain over the right and its more constant use by preference in right-handed persons may lead to a gradual abolition of the functions of the right side of the brain, in connection with speech, simply from disuse. This view, however, is hypothetical, but is rendered probable by certain considerations, among the most important of which is the statement by Longet, that ‘one cerebral hemisphere in a healthy condition may suffice for the exercise of intelligence and the external senses.’ In support of this statement, Longet cites several cases of serious injury of one hemisphere without impairment of the intellect.”¹

The facts, both experimental and pathological, bearing upon the vexed question of the functions of the cerebellum are elaborately discussed by our author in Chapter XIII. It is well known that Flourens, many years ago, arrived at the conclusion that the cerebellum should be regarded as the nervous centre for the co-ordination of muscular motion. This view was based upon a series of well-executed experiments which have since been often verified by other physiologists. There can, indeed, be no doubt about the effects produced by the removal of the whole or portions of the lesser brain. The difficulty lies in the interpretation of these effects. Until lately most physiologists have been willing to adopt, not only the facts as set forth by Flourens, but also the conclusions which he based upon them.

There have not been wanting authorities, however, who, like Foville, Lussana, Goltz, and others, have refused to accept the co-ordination theory. Dr. Flint, after a careful examination of the experimental and pathological evidence bearing upon this subject, unhesitatingly concludes that the cerebellum presides over equilibration and the co-ordination of muscular movements, particularly those of progression. As the whole subject is one of considerable interest, the following extract is taken from the work before us as embodying the author’s positive and definite conclusions:—

“Confining ourselves still to the interpretation of experiments upon living animals, and leaving for subsequent consideration the phenomena observed in cases of disease or injury of the cerebellum in the human subject, we are led to the following conclusions:—

“There is a necessity for co-ordination of the movements of the general voluntary system of muscles, by means of a nerve-centre or centres.

“Whatever other functions the cerebellum may have, it acts as the centre presiding over equilibration and general muscular co-ordination.

“The cerebellum has its nervous connection with the general muscular system

¹ Longet, *Anatomie et physiologie du système nerveux*, Paris, 1842, tome i., pp. 666 *et seq.*

through the posterior white columns of the spinal cord, a fact which is capable both of anatomical and physiological demonstration.

"If the cerebellum be extirpated, there is loss of co-ordinating power; and if the posterior white columns of the cord be completely divided, destroying the communication between the cerebellum and the general system, there is also loss of co-ordinating power.

"When a small portion only of the cerebellum is removed, there is slight disturbance of co-ordination, and the disordered movements are marked in proportion to the extent of injury to the cerebellum.

"After extirpation of even one-half or two-thirds of the cerebellum, the disturbances in co-ordination immediately following the operation may disappear, and the animal may entirely recover, without any regeneration of the extirpated nerve-substance. This important fact enables us to understand how, in certain cases of disease of the cerebellum in the human subject, when the disorganization of the nerve-tissue is slow and gradual, there may never be any disorder in the movements."

Dr. Flint then proceeds to consider at some length, the pathological facts bearing upon the functions of the cerebellum. He tabulates and analyzes ninety-three cases of disease of the cerebellum quoted by Andral, and endeavours to show that they by no means militate against the generally received physiological doctrine of the function of the lesser brain.

"We now come," he continues, "to the main question, whether or not, in view of the results of experiments on animals and the phenomena observed in cases of disease or injury of the cerebellum, this nerve-centre presides over co-ordination of action of the muscles, which is certainly necessary to equilibration, except the muscles of the face and those concerned in speech. This question seems to us to be capable of a definite answer.

"Every carefully-observed case that we have been able to find, in which there was uncomplicated disease or injury of the cerebellum, provided the disease or injury involved more than half of the organ, presented great disorder in the general movements, particularly those of progression. We have collected the more or less complete reports of sixteen cases.

"Notwithstanding the contrary views of many physiological writers, we are firmly convinced, from experiments and a careful study of pathological facts, that there is no one point in the physiology of the nerve-centres more definitely settled than that the cerebellum presides over equilibration and the co-ordination of the muscular movements, particularly those of progression. In this statement, we make exceptions in favor of the movements of respiration, deglutition, of the face, and of those concerned in speech, as well as the involuntary movements generally. As another example of a nerve-centre presiding over muscular co-ordination, we have the instance of the portion of the left anterior lobe of the cerebrum, which co-ordinates the action of the muscles concerned in speech.

"The theory that the disordered movements which follow injury of the cerebellum are due simply to vertigo is not tenable. In only three of the cases cited, is vertigo mentioned; and in two, the word vertigo seems to be used rather as an explanation of the phenomena observed, than in their simple description. There is a disease involving the semicircular canals and other parts of the internal ear, called Ménière's disease, in which there is marked want of equilibration and muscular co-ordination, attended with, and probably dependent upon, vertigo. The vertigo is always very distinct, and is mentioned in all of these cases; and though it is less in the recumbent posture, it is never entirely absent. A very elaborate article on certain affections of the inner ear, including Ménière's disease, with numerous illustrative cases, was published by Dr. Knapp, in the *Archives of Ophthalmology and Otology*, New York, 1871, vol. ii., No. 1. A careful study of these cases, comparing them with the cases of deficient co-ordination from disease of the cerebellum, cannot fail to show a great difference between the phenomena following cerebellar disease and the muscular phenomena due to well-marked and persistent vertigo."

An account of the minute structure, properties and functions of the ganglia at the base of the brain, and the sympathetic nervous system, and a disquisition on sleep, its phenomena and the various theories which have been advanced at different times in explanation of it, constitutes the subject matter of the last three chapters of the volume under consideration.

In many respects Dr. Flint's work is an excellent exposition of the present state of our knowledge of the physiology of the nervous system. Though somewhat diffuse and occasionally prone to repetition, it is well written, and has evidently been compiled with much care and judgment from numerous and reliable sources.

J. A. M.

ART. XIX.—*Diseases of the Ovaries; their Diagnosis and Treatment.*

By T. SPENCER WELLS, Fellow and Member of the Council of the Royal College of Surgeons, England; Surgeon to the Samaritan Hospital for Women, etc. etc. etc. 8vo. pp. 478. New York: D. Appleton & Co., 1873.

In turning to an examination of this very important work, we could not but feel that its appearance had been in no small degree anticipated. The author has been a frequent writer upon the subject for fifteen years past. In papers read before societies or published in journals, in a previous volume issued in 1865, in reports of cases by series of a hundred at a time, he has traced his progress in ovariectomy, and recorded his experience. Nevertheless the present work demands notice. It is written after the termination of five hundred completed operations, and therefore contains the fruits of an experience beyond that ever enjoyed by any other man. It is the crowning work of one who, it must be acknowledged, has long been looked upon as the highest authority upon the subject. These facts alone demand for it our attention, give to its contents a peculiar value, and will insure its hearty welcome by every one interested in this greatest surgical achievement of recent times.

It is scarcely necessary to say that the work is an original one. The author is in possession of too much material of his own, to occupy space with the opinions or labours of others, and we find very little matter of this kind in the book. On the other hand it is not a case book, and, while many cases are detailed in full, they are always interesting and instructive, as illustrative of the point in hand. The work is a record of the author's progress along a path in which he was one of the pioneers. He has traced his progress simply and unostentatiously; above all, in regard to difficulties and results, with scrupulous honesty. The student of the subject will find here not only a faithful teacher and guide, but one whose extensive experience enables him to give assistance upon points not generally treated of.

In a recent number of this Journal, we reviewed the works of Drs. Atlee and Peaslee upon ovarian disease and ovariectomy, and then entered upon an examination of some of the points relating to the subject which are especially new, especially important, or as yet undecided. In all these respects none can stand second to the value of an examination of the fluids of ovarian cysts as a means of diagnosis, and we naturally turned with

extreme interest to those parts of Mr. Wells's work which treat of this part of the subject. In Dr. Atlee's work the highest importance is attached to an examination of the fluids withdrawn by tapping, in cases of abdominal dropsy, as a means of differential diagnosis, and the existence of a peculiar cell, to be discovered by microscopic examination, is held to be pathognomonic of ovarian dropsy, and, therefore, a sure and reliable guide to diagnosis. We would fain have welcomed this as a most valuable addition to our knowledge, and scarcely dared to express doubts in regard to it, so emphatically was it stated, and so abundantly sustained by reports of cases, which seemingly furnished fair proof of its truth. Yet we felt compelled to hesitate in giving our assent to the doctrine from a most striking resemblance between the figures of the "ovarian corpuscles" of Dr. Peaslee's work and those of the inflammatory globules of Gluge of Dr. Atlee's, and, further, from the fact that we had nowhere seen any statement as to the existence of such cells given by men of authority in microscopy.

We perused, therefore, the parts of Mr. Wells's work which treat of this subject with more than ordinary interest. We find full descriptions of the microscopic objects to be found in the fluids and solids of ovarian tumours, we find descriptions and figures of various cells, but no mention of any particular one as peculiar to ovarian fluids alone. The nearest approach to the cell described by Dr. Atlee seems to be Fig. 18, and this is said to be "identical with the pyoid bodies of Lebert or the exudative cells of Henle." Not a word is said of these or of any other cells as being pathognomonic of ovarian fluids, or of their presence or absence as furnishing a reliable basis for diagnosis. This high authority does not, therefore, sustain a doctrine which would have been everywhere hailed as a substantial and valuable aid in those obscure cases in which the diagnosis is difficult even to the most experienced.

It may be as well to say, in concluding this part of the subject, that since the publication of Dr. Atlee's work not only has no confirmatory evidence of the existence of the peculiar ovarian cell been furnished, but, on the other hand, direct denial of its existence has been publicly made by men of experience in microscopic examinations, and who must be accepted as authority upon the subject.¹

But there is no doubt that most valuable information may sometimes be derived from an examination of the fluid of supposed ovarian tumour, some striking physical characteristics marking, most reliably, certain pathological conditions. Thus, a clear, limpid fluid, of very low specific gravity, non-coagulable by heat or nitric acid, seems to be pathognomonic of cysts of the broad ligament, a form of disease which is, generally, permanently cured by a single paracentesis. This doctrine is plainly taught by both the American authors above alluded to.² Now upon examining Mr. Wells's work we were not a little surprised to find no recognition at all of cysts of the broad ligament as a pathological condition. It is especially remarkable since these cysts were recognized in England by Dr. Frederick Bird and Mr. Cæsar Hawkins before 1850, and by Clay at a still earlier date.³ There is no recognition, by name, of cysts of the broad ligament; they will of course certainly fall among those cysts alluded to (p. 230) as "extra-ovarian," and there is also recognition of the fact that such cysts "may

¹ Proceedings of the Pathological Society of Philadelphia: Phila. Med. Times, April 12, 1873, and Med. News, May, 1873, p. 75.

² Atlee, Chap. II. Peaslee, pp. 99-102.

³ Peaslee, p. 100.

be not only temporarily emptied, but emptied with the probability that the fluid will not collect again," and cases illustrative of this fact are detailed in the book. Upon the same page there appears also to be a recognition of the limpid character of the fluid, and the extra-ovarian cyst, but only seemingly as coexistent, both to be suspected

"1st. When it [the tumour] has been of many years' duration with very little damage to the general health; and 2dly, when it has formed with such extreme rapidity as to be almost certainly mistaken for ascites."

But the important and noteworthy point is that we nowhere find that distinct statement of the doctrine that this kind of fluid indicates this kind of cyst, no effort to impress the value of the fact, no direction for withdrawal of a specimen of the fluid for examination, and as an aid to diagnosis, which we should have expected. In practice, we cannot doubt that Mr. Wells estimates all these points at their true value and governs himself accordingly, but here we are concerned with the teachings of his book, and in this respect feel compelled to say that it is not up to that of other writers upon the subject.

We pass to one more point relating to an examination of the fluids as an aid to diagnosis. The close resemblance of fibro-cystic tumours of the uterus to ovarian tumours is well known; a differential diagnosis between these forms of disease being confessedly the most difficult of all. Neither size, position, nor shape of the tumour, not even fluctuation, or hardness, or any other physical condition affords any assistance, nor does the history of the case or age of the patient, nor can any reliance be placed upon the facial expression, as Mr. Wells confesses, although he lays considerable stress upon a certain physiognomy belonging to ovarian disease, and he finally says that "some cases can only be cleared up by an exploratory incision," and this is the testimony of all writers. Under these circumstances it is but fair to expect mention of every sign likely to aid in making a diagnosis; it may be that the sign is not yet positively proved to be available or to have any great value, yet if any one person of considerable experience has found it of service in diagnosis, it certainly deserves statement and consideration. Such a sign there is, and its value has such support. We allude to the spontaneous coagulability of the fluid, on exposure to the air, withdrawn from fibro-cystic uterine tumours as indicating that the disease is not ovarian. This doctrine is distinctly taught by Dr. Atlee, and great stress laid upon it as a means of diagnosis. Although no stress is laid upon it by Dr. Peaslee, yet this characteristic of the fluid of the fibro-cystic tumours is mentioned as one of the points for a differential diagnosis. In regard to these tumours Mr. Wells says:—

"Even after an exploratory incision, I know of nothing but a rather darker—less pearly blue—aspect of the tumour which would put the surgeon on his guard. In any doubtful case it would be well to tap the largest cyst and examine the fluid. In both my cases this was peculiar; not the viscid mucoid fluid of multilocular ovarian cysts, but a thin serum, with five, ten, or fifteen per cent. of blood intimately mixed with it, and not separating until after standing for some hours. In this way I have satisfied myself, in at least four cases, that tumours, which others considered to be ovarian, were really fibro-cystic uterine growths."

This is the only mention of the character of the fluid of fibro-cystic tumours, and "after eight years' further experience," since this was written, the author has nothing more to add. Yet in Dr. Atlee's work we have the explicit statement (p. 263), that Mr. Wells's attention was called to

this point by him as long ago as in 1867. We can only conclude again, and are forced to this conclusion from various considerations, that in practice the author is in advance of his book.

Possibly one fact stated and commented on by Dr. Peaslee (pp. 106-7), may have some bearing upon this point. We allude to the undoubtedly far greater frequency of occurrence of fibro-cystic tumours of the uterus in this country than in Europe; a fact which seems well authenticated and is certainly singular.

There are some points relating to the differential diagnosis of ovarian disease, in regard to which this work is particularly full and complete from the vast experience the author has enjoyed. One of these is renal-cyst, less interesting for our consideration here, because more rare, than another—pregnancy—a condition occurring every day and likely at any moment to present perplexing questions to every practitioner for solution. The ordinary signs of pregnancy are considered in detail; especial mention is made of the “secondary areola” around the nipple, which does not, however, make its appearance until the end of the fifth month, as a sign “which may be relied upon with great confidence, provided the woman has never been pregnant before;” the deep violet or purple hue of the vagina “does not occur in ovarian disease unless complicated with pregnancy;” and the changes which take place in the consistency, as betrayed to the touch, of the os and cervix uteri, are well stated to be of great importance. These changes “are perceptible even during the first month after impregnation” to a careful and experienced observer. Still, mistakes may be made.

“As the irregularities of an ovarian tumor [felt *per vaginam*] often simulate very closely those of the breech or shoulder, or other portions of the foetus which might be supposed to be present. I have known one of the best writers and teachers of midwifery declare that he could feel the foot of a child—both heel and toes—yet this was only part of a malignant ovarian tumour.”

The most valuable portion of this part of the work is that upon ovarian disease complicating pregnancy, as the occurrence of a case to us not long since gave us reason to appreciate. For counsel and assistance in its treatment we were driven to ransack journals, and found only here and there any help, and indeed scarcely any, except some articles from the pen of the author. Now the profession has at command and for easy reference an array of cases and the lessons learned from their observation. Pregnancy having occurred in a patient afflicted with an ovarian cyst, the first plan considered is that of letting her alone and doing nothing. Three cases, the author has seen, in which pregnancy thus passed over safely to its termination for both mother and child. These cases, however, are justly considered exceptional.

“I cannot remember one other case where pregnancy complicated with ovarian disease has gone on to its natural termination in the birth of a living child; or where, in consequence of non-interference, great suffering has not arisen during or after labour, or very grave danger from rupture or rotation of the cyst; or where it has not been necessary to guard against threatening danger, and either to tap the cyst or to induce premature labour.”

Interference, then, should be the rule, and that interference by tapping, since by premature labour the child is certainly lost. The author has had five cases of patients tapped during pregnancy, one of them submitted to the operation three times, and all of them went through their pregnancy

well and gave birth to living children. Three times he has seen spontaneous rupture of the cyst and death before the seventh month.

No less interesting and valuable to the ovariologist are the cases, and remarks upon them, in which during the progress of the operation the existence of pregnancy was first discovered.

First in order, among the measures of treatment of ovarian dropsy, stands tapping, and in regard to its advisability the widest difference of opinion has been expressed by equally high authority. Passing from the "tapping is a crime" of Stilling, at one extremity of the scale, we find, at the other, those who consider it scarcely, if at all, more serious for this disease than it is for ascites. It is to be considered in two aspects: 1st, as to its absolute danger; 2d, as to its influence upon subsequent ovariectomy. In regard to the first, the author belongs to that class who do not estimate tapping as a very dangerous operation; but as one which may be resorted to without hesitation whenever circumstances demand it, and we do not find that he makes so marked a distinction between the danger of tapping different kinds of ovarian cysts as the multilocular or simple.

"Simpson's calculation was that the mortality after first tapping was not less than one in six. Under the present simplified mode of tapping, I very much doubt whether it is as much as one in sixty. I believe it is considerably less than this in my own experience."

He contrasts the "present simplified mode" of operation with that "formerly practised," but how long ago thus practised he does not say. We certainly have never seen, in our time, and we can speak for twenty-five years, anything of an operator "using a trocar like a dagger" and stabbing the patient with considerable force! nor were we thus taught to operate, although we received our instruction in a section of the world believed to be remote from the centres of civilization and medical learning.

A careful performance of the operation has, of course, much influence upon its results:—

"Great difference of opinion has been expressed as to the danger or harmlessness of admitting air into an ovarian cyst while the fluid is escaping. Some writers have argued that it can do no harm. My own opinion, founded upon the few cases where I have been quite sure that air has entered, is very decidedly in accordance with those who assert it to be frequently followed by decomposition of the fluid which remains in the cyst, or is secreted soon after tapping, by cyst inflammation, and the fever which accompanies it."

In regard to the second point—the increased mortality of ovariectomy after paracentesis has been performed—the decision is, that it is not increased. The author has carefully studied the record of his five hundred cases, some of them tapped as many as eighteen times, some not at all, and presents the facts bearing upon this point in a tabular form. The following are his conclusions:—

"1. That one or many tapings do not increase considerably the mortality of ovariectomy.

"2. That tapping may often be a useful prelude to ovariectomy. . . .

"3. That when the siphon-trocar,¹ which I brought before the profession in

¹ The siphon-trocar is modelled upon one invented by Mr. Charles Thompson of Westerham, and to whom it is credited by Mr. Wells, and figured on page 267. The arrangement of this latter effectually guards against the admission of air, and it is no more complicated, and but little more expensive, than the ordinary in-

1860, is carefully used in such a manner as to prevent the escape of ovarian fluid into the peritoneal cavity, and the entrance of air into the cyst, the danger of tapping is extremely small."

Tapping through the vagina receives due consideration and the author's experience is detailed. This measure is said to be "much more liable to be followed by inflammation of the cyst than tapping through the abdominal wall."

Tapping with injection of iodine has not been very successful in the hands of the author. In two cases where the cysts did not refill for several years, he believes the same result would have followed simple tapping.

We find no mention of the modification of tapping, or exploration, by Dieulafoy's aspirator, the hypodermic syringe, or other similar means.

Besides the usual interest attaching to the subject of anæsthesia during ovariectomy, from the influence it must exercise upon the results of so severe, and often prolonged, operation, we find an unusual interest in this volume from the author's experience with a new anæsthetic, and one so little used and known in this country, that we give pretty fully the remarks made upon it. With chloroform Mr. Wells soon became dissatisfied from the frequency with which severe and continuous vomiting followed its administration, and the unpleasantness of ether, and the difficulty of procuring complete insensibility with it, led him to make trials of mixtures of the two in varying proportions. To these he found the same objection which Snow has urged; the more volatile liquid evaporated first leaving the more dangerous for sole inhalation, thus exposing the patient to greater danger because already fully narcotized and the surgeon under the influence of a fancied security. We are fully satisfied that the addition of alcohol, as in the mixture recommended by the committee of the Royal Medical and Chirurgical Society, obviates this objection and furnishes an anæsthetic, as we have before taken occasion to urge, peculiarly adapted to ovariectomy.¹ In the author's hands this mixture "appeared to answer better" than the others, but while experimenting with it, Dr. Richardson brought forward the bichloride of methylene. It is this new anæsthetic which Mr. Wells has since used, and so far as we know he has had the most extensive, as well as the earliest experience with it. He performed the first operation ever performed upon a patient under its influence in October, 1867. Since then it has been the anæsthetic employed for about two hundred and eighty cases of ovariectomy. And

"In some 35 other cases of gastrotomy, and in more than 100 operations of more or less severity—such as herniotomy, amputation of the breast, removal of mammary or other tumors, or of hæmorrhoids, and plastic operations for the cure of vaginal fistula or ruptured perineum—chloro-methyl has been administered for all. . . . In very few of these operations was the condition of insensibility to pain maintained for less than five minutes. In a few, it was kept up from forty-five minutes to an hour or more, and I should think the average would be about fifteen minutes. Yet I have never been at all uneasy in any one of these cases, more than 350 in number, either during the administration of the anæsthetic or from any subsequent ill effects fairly referable to it.

strument. Now that paracentesis thoracis is becoming so prominent as a therapeutic measure, we do not see why this instrument should not entirely take the place of the ordinary trocar and canula for every purpose except, perhaps, the operation for hydrocele.

¹ Mr. Bryant in his "Surgery" (Am. ed., p. 613) strongly recommends this mixture for ovariectomy.

. . . It is quite true that chloro-methyl has also the disadvantage of causing nausea and occasional sickness; but in my experience, this is almost the rule with chloroform, whereas with chloro-methyl it is certainly exceptional. . . . The patient very seldom becomes pale, she sleeps quietly, awakes quietly, is not often sick. . . . Indeed, she gains all the advantages of complete anæsthesia with fewer drawbacks than I have ever obtained by the use of any other anæsthetic."

This is a glorious record! to be hailed with gladness alike by the surgeon and the philanthropist. Having long been convinced that neither ether nor chloroform (except in obstetrical practice) will be the anæsthetic of the future, we trust that it is now found in bichloride of methylene and the long wished for power of producing unconsciousness to pain without danger is at last at our command.

It is not our purpose to enter into the details of the operation; the space already devoted to diagnosis and other subjects of more general interest, precludes it. It is scarcely necessary to say that every step of the operative procedures is fully described and commented on. We find twenty-two pages devoted to the management of the pedicle. The author is well-known to be a strong advocate of the extra-peritoneal method of treatment, and his "clamp" is equally well known everywhere. To this plan of treatment and to this instrument he still adheres, admitting that his success with the ligature has not been as good as that plan of treatment seems to deserve, and stating that his later and wider experience has furnished nothing to shake his confidence in the superiority of the course he has generally pursued.

It would seem as if the pedicle question of ovariectomy ought to be settled by this time. The amount written upon it and the ingenuity expended in devising new and often complicated modes of treating it, have been immense. It has been settled. Under different, and often widely different, modes of treatment, each believed by conscientious men to be the best, the mortality has varied so little as to prove that no particular mode of procedure is essential to success, and Mr. Wells endorses this verdict when he says that "no surgeon who has had much experience of ovariectomy would bind himself to adopt in all cases either the extra-peritoneal or the intra-peritoneal method, or any of the modifications by which either principle is carried out in practice."

In regard to closing the wound after the operation the author says:—

"The including of the peritoneum within the stitches is of the *utmost importance* for the success of the operation."

We quote this only to say that one of the American operators who stands among the highest as to number of cases and ratio of success, pursues just the opposite course and believes his plan to be equally important! Mr. Bryant, too, no mean authority in ovariectomy, after having tried both plans, says, "upon the whole I do not think the matter of much consequence."

We find no notice of the enucleation of ovarian tumors, and in regard to the washing out of the peritoneal cavity by injections as practised and advocated by Peaslee and Marion Sims, the author says he has followed the plan in a few bad cases but never with success.

We are forced to make some remarks upon Mr. Wells's account of the "rise and progress of ovariectomy," which we would gladly have omitted were the compulsion from any less source than a deep sense of duty. We

regret to find in Mr. Wells's pages a lack of that generous accord of honour where it most justly belongs, which we certainly did not expect, for no one could better than he afford to be magnanimous, together with an evident effort to claim honour for his own countrymen at the expense of others. We will not do either Mr. Wells or our readers the injustice of making only general statements upon so important a point, but quote the specifications from the pages of the work.

"No one can dispute the validity of the direct claim of McDowell as designedly the first rational ovariologist. At the same time it must be maintained that the still greater merit of pointing out the absence of any physiological reasons against the operation, the possibility of its safe performance in the human female, and the class of cases in which it ought to be admissible, is due to a series of eminent British surgeons."

Why and how, let us ask, is it "the still greater merit" to propose a new and untried operation than to perform it? Is not this to reverse the usual accord of honours in scientific discovery? Then Sir Humphry Davy must stand higher in the history of anæsthesia than Horace Wells, and Jackson than Morton, and above Simpson, falling insensible under the table from the effects of the yet untested chloroform. But not by this rule have honours been heretofore awarded; the actor and achiever has always received, as he deserves, the highest honours, and before him the proposer is but a subordinate. Does the proposition of ovariectomy belong only to "a series of eminent *British surgeons*?" Mr. Wells's pages contain mention of Schorkoff, 1685, and Schlenker, 1722, and Willius, of Basle, 1731, and Ulric Peyer and Delaporte and Morvand. There could be no clearer proposition of the operation, nor more positive conviction of its feasibility expressed, than by Chambon, 1798, which Mr. Wells gives, and which were published eleven years before the first operation was performed. None of these were British surgeons, and they deserve their credit, nor is it necessary to detract from that of the Hunters and Bell to give it to them.

If to Dr. McDowell is accorded the honour of being the "first rational ovariologist," it is but scant praise that is meted out to him. After a page of special pleading in favour of British surgeons who, in view of the "sacredness of human life," "shrank from the responsibility" of first attempting the operation, the author says:—

"But McDowell was a free man, in a new country, clear from the conventional trammels of old-world practice, found his patients in the most favourable conditions of animal life, seems to have had one of those incomprehensible runs of luck upon which a man's fate and reputation so often turn if he has the sagacity and energy to put such fortunate accidents to good account, and was happy, as those usually are who can afford or constrain themselves to wait, in finding suitable time, place, persons, and opportunity for testing the exercise of his young American '*felix temeritas*,' based upon and guided by the Scotch '*perfidum ingenium*' of his tutor Bell. He lost only the last of his first five cases of ovariectomy, and thus, as it were, established at the outset the natural standard of mortality which may be expected for so serious an operation."

But this is not all. Mr. Wells quotes, on the authority of Dr. Atlee,¹ a case "which claims the priority of McDowell by more than a century." It is the case of Dr. Robert Houstoun, 1701; a case which, if the words of the operator himself mean anything, was no more than the incision of an

¹ In this Journal, vol. xvii., 1849, p. 534.

ovarian cyst or cysts and evacuation of the contents. Yet Mr. Wells remarks :—

“From this case it will appear *that ovariectomy originated with British surgery on British ground!*”

Yet, on the preceding page, Mr. Wells has rejected L'Aumonier's case, 1776, as one of ovariectomy, to which it has as good claims as Dr. Hous-toun's. Is this done because L'Aumonier was not a *British* surgeon? for some French writers still claim this as the first ovariectomy!

We had supposed it unnecessary at this late day to vindicate the rightful claims of Dr. McDowell and of our country to their proper position in the history of ovariectomy. The above quotations show that we were labouring under a mistake, and other facts indicate the same thing. But recently two of the leading journals of Great Britain have contained the report of the first ovariectomy in one of the largest cities of the east, and the operator and reporter speaks of it as “this peculiar triumph of British surgery!” And here we have not only grudging acknowledgments made on one page, with counter claims on the next, but the direct assumption of the honours of the discovery. We cannot afford to pass in silence such attempts to withhold from us our just due. Short as has been our time among the nations of the earth, we have rendered some service to the progress of the race and the advance of medical knowledge, and however much or however little we have done, the last to which we would consent to surrender our claims would be our contributions to the progress of anæsthesia and ovariectomy.

Notwithstanding this blemish in regard to the historical portion of the subject, we cannot avoid congratulating Mr. Wells upon the appearance of this work. It is the crowning act, thus far, of a life which we trust is yet far from its close, full of success and usefulness and advance of our art. His devotion to the subject; his early success; his earnestness; above all, his scrupulous honesty in reporting results,—that prime quality of a scientific man who enters upon a new field of research—these gave him the confidence of his professional brethren, and his fortunate insular location, surrounded by a teeming population, furnished him the *materiel* for an experience surpassing that any other man has ever enjoyed, or probably ever will enjoy, and of which he has made good use. But, in congratulating him upon his success, we will not attribute any part of it to “one of those incomprehensible runs of luck” which sometimes favours mortals, but upon the possession of excellent qualities and the development of his powers. He has made for himself a most prominent and enduring name in the history of ovariectomy, and it will be written of him as he writes of McDowell, “As a surgeon he was exceedingly cautious, calm, and firm; paying great attention to the details of his operations and treatment, and selecting and drilling his assistants with much care.” J. C. R.

¹ See Dr. Peaslee's work, Part II., Chapter I., On the Early History of Ovariectomy.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XX.—*Saint Bartholomew's Hospital Reports*. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. VIII. 8vo. pp. 208. London: Longmans, Green & Co., 1872.

SUCCESS seems thus far to have attended the issue of the volumes of this series, and this success is not surprising when we remember the distinguished gentlemen who compose the medical and surgical staff of St. Bartholomew's Hospital. The present volume is made up of twenty-five papers, most of which contain matter of interest to the members of our profession.

We shall first call attention to the medical papers in the volume.

Dr. W. B. KESTIVEN contributes a paper *on the Morbid Histology of the Spinal Cord*, in which he has confined himself to the endeavour to present a general outline of the principal changes to which the spinal cord has been found by pathologists to be obnoxious. It presents a very good résumé of what is known of the healthy and morbid anatomy of the cord, and of the best method of preparing it for examination, but contains nothing which has not already, in some form or other, been laid before our readers.

Dr. SAMUEL J. GEE is the author of two papers, one on *Meningitis* and *Otitis Interna*, the other on *the Urinary Phosphates in Ague*. In the first the author contends that the connection between *otitis interna* unattended by any disease of the bone, and purulent meningitis, has been for the most part overlooked. In some cases the symptoms of otitis precede those of meningitis, in others, the symptoms of meningitis precede those of otitis, and in others, the symptoms of otitis are latent throughout. Of the existence of the first class of cases, we presume there is no doubt, but we are not inclined to admit the inflammation of the internal ear is a frequent cause of meningitis without giving rise to some symptoms by which its existence may at least be suspected.

In the second article Dr. Gee says the results of his experiments have shown that "the phosphoric acid followed a type of its own in its variations as to quantity at different periods of the paroxysm. At or soon after the first rise of temperature, the quantity of phosphoric acid began to fall below the standard of the apyretic period. This fall continued throughout the effervescence, and reached its lowest point an hour or two after the acme. Then the quantity of phosphoric acid began to increase, so that, at the completion of defervescence, it was nearly twice or thrice the normal. The hourly fall and rise were singularly progressive, and as before said, independent of the quantity of water."

Dr. DYCE DUCKWORTH is the author of three papers on diseases of the Skin, as follows: *Clinical Observations upon certain Skin Diseases. On Molluscum Contagiosum of Bateman. On the Nature and treatment of Porriigo decalvans (Area Celsi).*

In the first paper are contained the clinical histories of several interesting cases of skin diseases, such as morphœa, congenital xeroderma, lichen planus and ruber, and chronic pemphigus. Dr. Duckworth also reports a case in which favoid crusts were found together with patches of *tinea circinata*. His own examination of these crusts led him to believe that they were mere aggrega-

tions of the trichophyton, but Dr. McCall Anderson, by whom the crusts were likewise examined, thought that the fungus present was the *achorion schönleinii*. Dr. Duckworth says, however, that first, the affection resembled in no particular favus of the body, further then that there were present two or three very minute favoid masses upon one of the affected surfaces; secondly, sporules were found of precisely similar character, on all parts of the diseased areas; thirdly, there was no favus of the scalp, and there was no mousy odour about the patches; lastly, favus of the body is a rare affection. We are inclined to believe that this last statement is not strictly correct. It is certainly not in accord with our experience. A few years since we had the opportunity of observing a well marked case of favus in which the lower extremities and a portion of the body were covered with favoid crusts. The patient, who had been employed in a menagerie, asserted that he had caught the disease from a monkey.

Dr. Duckworth in the course of this article takes occasion to speak highly of the employment of simple olive oil by inunction in the treatment of psoriasis, and we have no doubt that many ointments owe their value to the oleaginous matter which they contain.

In the second paper the author refers to several cases of molluscum in which the disease seemed to have been induced by contagion, but he admits that there are also cases in which it seems to have arisen from some other cause. Most observers are, he says, agreed in attributing a large share in the causation of the disease to dirty habits and non-observance of the ordinary rules of hygiene, but there is evidence also to show that molluscum may appear, and in a severe form, too, upon persons so exceptionally clean as the frequenters of Turkish baths. He further says that certain persons of both sexes and at different ages are more than others liable to nutritional changes in their sebaceous system, and that this is especially true of infants, young children, and women. He rejects the theories as not proven which attribute the disease to the intrusion of parasites into the sebaceous follicles, and to epidemic influence. He therefore concludes that molluscum may arise sometimes in consequence of direct stimulation of the skin; also, as a tropical change following a local neurosis, or accompanying the condition of pregnancy.

In the last paper Dr. Duckworth maintains that the existence of a fungus in *Porrigo decalvans* or *alopecia areata* has not been demonstrated, holding that microscopist and dermatologist have mistaken particles of sebum for the sporules of a fungus. Inasmuch as the reasons for believing that the disease depends upon a defect of nutrition have been very clearly and succinctly given by Dr. L. A. Duhring, of Philadelphia, in a contribution to the number of this Journal for July, 1870, we do not think it necessary to present our readers with an abstract of this paper, especially since it contains little that will not be found in the article already referred to. Among those who assert that they have discovered the *microsporon Audouinii*, the fungus upon which *Porrigo decalvans* has been supposed to depend, are, Robin, Wedl, and Hebra, who, it seems to us, are scarcely likely to have mistaken particles of sebum for the sporules of a parasite.

The treatment recommended by Dr. Duckworth consists in the application of turpentine to the bald patches by means of sponges. The growth of hair, when it recommences, may be stimulated by constant shaving.

In a paper *On Cirrhosis of the Liver*, Dr. J. WICKHAM LEGG says that his observations have led him to the conclusion that it is highly probable that the liver cells themselves help in the general formation of connective tissue. After

remarking that but little attention has been paid to the changes in the hepatic cells, he says, they are greatly altered in both size and shape.

"They may be diminished to a quarter of their natural size, or become as small as two white blood-corpuscles would be together. This change in size may be traced, passing from the midst of the lobule to the point where the cells become lost in the growing connective tissues. They are known to be the same cells, because they contain similar nuclei and contents, which contents, however, frequently become paler the farther removed the cell is from the centre of the lobule; the cells also change greatly in shape. They become oblong, spindle-shaped, oval, or egg-shaped. The oblong-shaped cells predominate; and drawn out from their corners, may occasionally be seen filamentous processes, not unlike the appearance of a unipolar ganglion cell. These processes sometimes inosculate with similar offsets from other cells."

The conversion of the hepatic cells into connective tissue is not such an impossible idea as it may at first sight appear, when it is remembered that the change of liver cells into connective tissue has already been observed in the process of repair following certain wounds of the liver.

In a second contribution Dr. LEGG gives us the history of some *Cases in Morbid Anatomy* as follows: 1, Hydatids of the spleen and liver. 2, Escape of hydatid cyst into bile duct. 3, Disease of the pulmonary valves. 4, Syphilitic gumma of the heart. 5, Fibrous degeneration of the muscular fibres of the heart. The case of hydatids of the spleen is interesting, inasmuch as the parasite has not often been detected in this organ, and when detected, it has always been found also, as in this case, either in the liver or in the diaphragm. In the second case, both the common and hepatic ducts were seen to be distended to the size of a finger. Following the hepatic duct into the liver it was found to contain hydatid membranes, and in the right lobe where the liver is thickest, the duct opened into a large abscess, from the opening of which a part of the hydatid cyst was still protruding. The escape of hydatids into the bile ducts is not a very uncommon event. Dr. Legg refers to a case reported by Dr. Church, in which this natural cure was being accomplished when the patient unfortunately died of epistaxis. The three cases of disease of the heart are interesting, but with the exception of the case of syphilitic disease do not call for special notice here. The gummatous tumour in this instance was seated in the walls of the left ventricle at its base, and close to the septum behind. Near to the edges of the new growth, sections showed a transparent or slightly fibrillar matrix, in which nuclei usually round and varying in size from a white to a red blood-corpuscle were seen. Nearer to the middle, the nuclei became far more abundant, filling the greater part of the field, while the matrix was distinctly fibrous. Around the nuclei there could in some places be discerned with difficulty cells, mostly round and having a diameter just double that of the nucleus; in other cases, oval or spindle-shaped. In the middle of the growth the sections showed a confused, highly granular mass, and in this case fibres could be distinctly made out. The author looks upon this rapid change of the nucleated tissue into an amorphous granular mass as very favourable to the supposition that the growth is a gummy tumour of the heart. A general tuberculosis was not present in this case, so that all idea of tubercle, he thinks, may with safety be excluded. Sarcomata of the heart are never primary, and no other tumour could be discovered in the body (*Virchow Geschwülste*, Bd. ii. 442).

In an article on *the Degeneracy of the Teeth*, Mr. ALFRED COLEMAN confirms the general impression, that the teeth of the present generation are inferior as regards their strength and durability to the teeth of past generations, referring to some observations which he made in the crypt of Hythe Church, in Kent, in which are collected several hundred skulls. Two hundred of the skulls were

taken promiscuously, and the condition of the teeth carefully noted. Against these a comparison was afterwards made by the examination of the teeth of the same number of healthy individuals; and making, he says, the most liberal allowance for the uncertainty as to the state of the absent teeth in the old skulls, there could be no doubt respecting the fact that they were in their day and generation far less liable to disease than are the teeth of the present generation. Mr. Coleman traces this degeneracy of the teeth to the "condition of modern civilization." In the first place, in consequence of the greater prominence of the jaws of savages, the dental arches are more capacious and there is less crowding of the teeth than among civilized races. As causes for this departure from the uncivilized to the civilized type, two explanations have been offered. In the first it is referred to a breeding in by selection. Those whom we deem good looking, and who are most likely to marry early, and as a consequence have the largest number of children, are not persons having prominent teeth. Were our notions of the beautiful, as regards our own species, the reverse of what they are, the author thinks there is little doubt but that prominent teeth and well-developed dental arches would be the rule, and not, as we now find them, the exception.

The second reason, that the teeth of the present generation are inferior to those of preceding generations, is simply because the refinements of civilization have made them less necessary than formerly. Thus the use of the knife and fork, and the comparative perfection of the culinary art, have rendered the office of the incisors almost a sinecure, and the functions of the molars are so replaced that, the author says, we not unfrequently hear the edentulous remark that they can get on pretty well if they give themselves a longer time and cut up their food pretty well.

To prevent the decay of the teeth Mr. Coleman lays down the following rules: 1. The relief of overcrowding by removing those teeth which experience has shown to be most liable to disease, and these are the first molars. 2. The use of bread made of whole meal flour, which, besides being more nutritious than we commonly eat, would give our teeth much more exercise and our gums a more healthy stimulus. In this connection the author takes occasion to recommend that a child's universal liking for a bone to suck and gnaw should be indulged, believing that the increased flow of blood to the gums which is thus brought about fulfils a most important indication. 3. Constant attention to the condition of the teeth. The same civilization which has introduced the knife and fork, has to a certain extent atoned for it by the introduction of the tooth-brush. A thorough use of this will, the author believes, counteract all the evils of the former. It is not the mere cleansing that will do good; the very friction will harden the teeth and preserve the gums in a healthy condition.

Sweet things as articles of diet are injurious, chiefly by impairing the digestive processes. In regard to medicines, Mr. Coleman says he has witnessed the worst results from the long-continued use of the tincture of the chloride of iron, and he thinks that these are not prevented by taking it through a tube. He recommends that whenever it is taken the mouth should be rinsed with a strong solution of potassa or of the bicarbonate of soda. Of the acids, he regards sulphuric acid as the least injurious, for the reason that sulphate of lime is not soluble in it.

The *Condition of the Muscle in Pseudo-Hypertrophic Muscular Paralysis* has been the subject of some investigations by Mr. HENRY T. BUTLIN, the results of which do not appear to have differed materially from those already put on record by other observers. Thus an increased amount of connective tissue, together with a diminution in size of the muscular fibre and a loss of its

striations, was found in three cases examined by the author. An undue amount of oil was also noticed, and Mr. Butlin thinks it not unlikely that this is most abundant in the late stages of the disease. He thinks that the following may be *supposed* to be the progress of events in this affection.

"In the earliest conditions of the disease, the very small quantity of connective tissue which normally exists between the muscular fibres becomes increased in quantity and fibrillar, whilst the large quantity of connective tissue between the primitive bundles undergoes a proportionately still larger increase. Later a deposit of fat takes place in this newly-formed tissue, probably in the cellular element, and the deposit is most abundant where the connective tissue is in greatest quantity. As this deposit increases, it forms for itself wider and wider meshes in the connective tissue, until at last a true adipose tissue is produced."

Under the name of the *So-called Bed-sores in the Insane*, Dr. T. C. SHAW describes a condition which he says is not uncommon. These gangrenous patches are distinguished from true bed-sores by *rapidity of formation, occurrence on parts of the body not subjected to pressure*, as well as over the sacrum and trochanters, and by *general appearance*. Commencing by redness in a circular area (or rather a lividity denoting considerable venous congestion), in a very short time the skin dies, and a hard black patch is formed. After a period varying more or less from a couple of days to a week, the black patch separates together with the dead parts beneath it, and a cavity is left, which is, in some cases, slowly filled up by granulations, in others remains as a cavity until death occurs from exhaustion. He believes that the cause of this accident is the blocking up of the vessels in a definite area, and consequent death of the part so included.

The treatment the author recommends is to cut out the "patch" as soon as possible, and all the underlying dead tissues, down to the muscle if necessary, and to fill the cavity thus produced with "marine lint," which is both stimulant and antiseptic. In a short time granulations are said to form, and if the edges of the ulcer are brought closely together by plaster, a cure may be effected.

The last article in the volume is "*The Proceedings of the Abernethian Society for the Winter Session 1871-2.*" This society is composed of the teachers and students of St. Bartholomew's Hospital, and holds its meetings every week during the session. Many interesting papers appear to have been read before it, and in the discussions which followed the students appear to have taken part.

J. H. H.

We shall now invite our readers' attention to those papers which are more particularly addressed to surgeons, and first to some interesting remarks by Mr. WILLIAM S. SAVORY, F.R.S., *On Amputation for Traumatic Gangrene*. The author calls in question the propriety of the rule, since Larrey's time, ordinarily laid down by surgical writers, that, in cases of what is technically called "traumatic gangrene," amputation should be performed without waiting for the establishment of a line of demarcation; and justly remarks that when the occurrence of gangrene is obviously due rather to the depraved constitutional condition of the patient than to the severity of the local injury the prognosis of any operation will necessarily be very unfavourable. It may be that we have missed Mr. Savory's meaning, but it seems to us that he fails to draw a sufficiently clear distinction between the various forms of gangrene met with in surgical practice: every case in which gangrene follows an injury may, no doubt, in one sense, be called a case of traumatic gangrene; but, as we understand the term, and as it appears to us to have been used by the older

writers, the true "traumatic or spreading gangrene" is a very rare condition, and one for which immediate amputation is indeed the only remedy; death is in these cases due either to septicæmia, to the direct implication of vital organs by the spread of the disease, or to these causes in combination; and the only though doubtless a faint hope of safety rests, we firmly believe, in promptly removing the source of systemic infection (provided that the patient's general condition admits of any operation whatever), and in substituting an amputation wound, made through as yet healthy parts, for the wound which, slight as it may seem, will, we know by experience, otherwise inevitably lead to a fatal issue. We confess that until we had ourselves witnessed this disease in its most terrible form, and had seen the appalling rapidity with which a strong man, struck by traumatic gangrene, becomes in a few hours a living corpse, we had never realized the value of Larrey's teachings, nor the imperative necessity for immediate surgical interference.

Mr. ROBERT JALLAND narrates several *Surgical Cases*, one of ligation of the common femoral artery for wound of its profunda branch; one of herniotomy, complicated by the existence of adhesions within the sac; and one of tracheotomy for the removal of a foreign body (a marble) which had lodged in the windpipe. The result in each case was favourable. With regard to ligation of the common femoral artery, while we are quite willing to believe that it is a better operation in cases of aneurism than would be inferred from the teachings of Erichsen and Porta, we cannot agree that it is a desirable mode of treatment in cases of primary hemorrhage from wound of one of its branches; we think that Mr. Jalland's operation placed his patient in much greater danger than could have resulted from any incision, however free, which might have been required to allow the application of ligatures to the injured vessel above and below the point from which the bleeding proceeded.

The next paper which demands our attention is contributed by Mr. J. F. NICHOLSON as a case of *Singular Injury of Cranium by a Marble*. The patient was a boy five years old, who fell down stairs while looking for a marble, and sustained a compound fracture of the skull. No very careful exploration of the wound appears to have been made at the time of the injury, nor for more than three weeks afterwards, when, symptoms of cerebral irritation having supervened, chloroform was administered, and a hard substance, which proved to be the missing marble, was extracted from beneath the scalp. Several sequestra were subsequently removed, exposing the membranes of the brain, and the patient eventually recovered, remaining in good health when last heard from, ten years afterwards.

Following Mr. Nicholson's paper, is an interesting communication by Mr. THOMAS SMITH, on *Tubercular Disease of the Urinary Mucous Membrane*. By this name Mr. Smith designates an affection which is often called strumous or scrofulous disease of the urinary mucous membrane, and which commences as a tuberculous infiltration of the submucous tissue in some part of the genito-urinary tract, and usually first in the kidney. At a later period the prostate, testicle, and even the body of the penis, may become involved. The following are the post-mortem appearances in chronic cases:—

"The internal surface of the urethra, bladder, and ureters is seen either in patches or universally covered with a yellowish deposit, in consistence like soft cheese or putty, often mixed with phosphatic grits; this deposit adheres closely to the mucous membrane, which latter, on examination, will be found roughened, eaten into, or here and there ulcerated through; the submucous tissue is thickened and stiff, and infiltrated with deposit.

"The ureters generally appear externally thick, hard, stiffened, and shortened;

internally, they may have here and there a deposit of tuberculous matter in their walls, or the whole substance of the wall may be full of deposit, either partially obstructing the canal, or, if ulceration has taken place, this latter may be much enlarged; the mucous surface may be plastered over with the putty-like deposit, and here and there ulcerated. . . .

"The kidneys, where the disease has made much progress, will be more or less excavated; the loss of substance having taken place from the cavity of the pelvis and calices towards the outside of the kidney; the same kind of deposit being smeared over the interior of the pelvis, the calices, and the ulcerated cavities in the glandular structure. So much of the latter as remained contained isolated deposits of tubercle, in one case that I have examined."

The symptoms of tuberculous disease of the urinary organs very closely resemble those of stone, the early symptoms corresponding with those of renal, and the latter with those of vesical calculus. Mr. Smith points out a resemblance which is certainly sufficiently striking, between the effects of tubercle in the urinary and in the pulmonary mucous membranes:—

"Among the most common indications of pulmonary tubercle are suppuration, hæmoptysis, an increased secretion of mucus, with the occasional recurrence of a spasmodic expulsive muscular effort (in the form of cough).

"In urinary tuberculosis there is also suppuration, hæmaturia, an increased secretion of mucus, with spasmodic expulsive contractions of the bladder."

With regard to treatment, Mr. Smith recommends the free use of opium or morphia to relieve pain, with astringent preparations of iron and the confection of black pepper to control the hæmaturia, and the administration of cod-liver oil and iron as general constitutional remedies.

We next come to a case of *Simultaneous Dislocation of both Femora; Reduction by Manipulation*; by WILLIAM POLLARD.—The left femur was dislocated upwards and backwards, on the dorsum ilii, and the right femur downwards and forwards, into the thyroid foramen; the patient was seen shortly after the accident, and, chloroform having been administered, no difficulty was experienced in effecting reduction of either dislocation by simple rotation of the limb, aided, in the case of the right thigh, by manual extension.

J. D. RENDLE, M.D., gives an account of a case of *Aneurism of both Popliteal Arteries treated successfully by pressure on the Femorals*.—This case is one of much historical interest, as being the first in which compression was successfully employed for popliteal aneurism in St. Bartholomew's, or indeed, as Dr. Rendle believes, in any London hospital. The patient was a young Irishman, and was treated in June, 1847, under the care of the late Mr. Stanley. Instrumental compression was employed, and the result appears to have been perfectly satisfactory. Mr. Stanley's remarks, as appended in his own handwriting to Dr. Rendle's notes of the case, are as follows:—

"The conclusion we may draw from the foregoing account—that the aneurism in the right ham was caused by compression of the femoral artery, continued without intermission from the middle of Saturday to the middle of the following Wednesday—four days. That the aneurism in the left ham was cured by compression of the femoral artery, not continued uninterruptedly for so long a period at once, but with intermissions, for shorter periods—first 39 hours, then 24 hours, again 24 hours, and lastly 48 hours; after which there was no recurrence of pulsation on removing the tourniquet."

We shall next invite attention to a paper which is continued from Vol. VI. of the "Reports" (see No. of this Journal for July, 1871, p. 218), and which is entitled *Clinical Remarks on Deformities*, by ALFRED WILLETT. The subject of Mr. Willett's present contribution is antero-posterior curvature, or, as he would prefer to call it, angular disease of the spine—the "Pott's disease" of

French writers. While we are disposed to agree with Mr. Willett in most of his remarks, we think that he undervalues the importance of constitutional remedies in this grave affection, and we decidedly dissent from his condemnation of that plan of treatment which enforces the maintenance of the recumbent posture, which indeed we consider almost essential in the acute stages of the disease. His assertion, that "children pine away much more rapidly under confinement than do adults," will, we venture to say, not be confirmed by those who have most experience in the surgery of childhood: it is, on the contrary, we believe, a matter of common observation, among those connected with hospitals especially designed for children, that these little patients bear long confinement to bed remarkably well. The mechanical apparatus employed by Mr. Willett is a modification of that recommended by Dr. Taylor, of New York, and acts by drawing the upper part of the spine backward (the lower part being fixed), and thus preventing the inflamed bone surfaces at the seat of deformity from coming in contact. For hospital patients, Mr. Willett recommends a cheap form of apparatus, devised by his colleague, Mr. Morratt Baker, in which the necessary force is obtained by using elastic steel bands, very much as in the ingenious knee-splint, described by Dr. Howe, of Philadelphia, in the number of this Journal for April, 1868 (page 358). Mr. Willett (judiciously, as we think) abstains from any effort to remove the deformity which may be present when he applies his apparatus, and contents himself with endeavouring to prevent the further progress of the disease.

Mr. W. MORRANT BAKER describes a *Case of Ligature of the Common Iliac Artery*. This case is one of much interest. The patient was a youth of seventeen, who had a large swelling, supposed to be an abscess, in the gluteal region; the swelling having been opened, a stream of arterial blood came forth, and exploration of the part soon showed that the source of the hemorrhage was within the cavity of the pelvis. The sciatic foramen was temporarily plugged, and the next day the common iliac artery was tied, hemorrhage still persisting, though it was now readily controlled by pressure. The patient died forty hours subsequently, with evidences of incipient gangrene. Post-mortem examination revealed extensive disease of the sacro-iliac joint of the affected side, and rendered it probable (though this could not be positively ascertained) that the source of the hemorrhage was an ulceration of one of the branches of the internal iliac artery.

We next come to a *Case of Fibroid Polypus of the Uterus, complicated with complete inversion, Reduction of the inverted Uterus*; by ALBERT F. FIELD. The treatment in this case, which is one of considerable interest, consisted in removing the fibroid growth, which protruded from the vulva, by means of an *écraseur*; and in subsequently restoring the inverted womb to its normal position by manual pressure, aided by multiple incisions of the cervix uteri and by the use of an air bag, to maintain constant pressure upon the displaced organ in the intervals between the manipulations. In concluding his paper Mr. Field refers to various cases in which reduction of the inverted uterus has been effected by similar means in the hands of other surgeons.

Mr. LUTHER HOLDEN describes *Two Cases of Popliteal Aneurism cured; one by Pressure; the other by Genuflexion, combined with Pressure*. Mr. Holden's first patient was a newspaper reporter, and traced the formation of his aneurism to having been obliged to sit in a cramped position, with his leg bent under him, for three hours daily during two months, while he was noting the proceedings in the "Tichborne case." The treatment consisted in (1) digital pressure, reinforced by laying a weight of twelve pounds over the fingers for 30 hours;

(2) digital pressure as before for $34\frac{1}{2}$ hours; (3) instrumental pressure, with a Signoroni's tourniquet for $16\frac{1}{2}$ hours; and (4) instrumental pressure for 35 hours. The whole course of treatment occupied nearly a month, convalescence having been slightly retarded by the formation of a slough at the point at which the pad of the tourniquet had been applied. In Mr. Holden's second case, forced flexion, in the manner recommended by Mr. Ernest Hart, was employed for two weeks, during the second of which it was supplemented by instrumental pressure in Scarpa's triangle, less extreme flexion being then maintained until the end of a month, and the patient being still kept in bed a fortnight longer, on account of synovial effusion in the knee, the result of the long-continued fixation of the joint.

Mr. HENRY POWER gives an account of *A Case of Optic Neuritis in which Wecker's operation was performed: and some selected cases*. "Wecker's operation," which consists in slitting the sheath of the optic nerve, is thus described:—

"Having made an opening in the conjunctiva a little behind and below the insertion of the tendon of the external rectus, the eye was turned inwards as far as possible, and the guarded knife (Wecker's) passed behind the eyeball; there was but little trouble in finding the nerve, as directly that was touched it caused the eyeball to rotate; the sheath was then slit up for the distance of a line. The conjunctiva was then united with three silk sutures. These were allowed to remain for three days and then removed, at the end of which time the wound was quite healed; there was perception of light in the right eye on the third day after the operation [the eye was previously quite blind], and great diminution of the pain in the head. The ophthalmoscopic appearances were the same except that the retinal vessels were less congested than previously to the operation."

Mr. Power's "selected cases," which are all interesting, include several of injury to the eye, and one of acute choroiditis with hypopyon, requiring iridectomy, and, ultimately, excision of the globe.

Following Mr. Power's cases is a *Note on the Death-Rates after Amputations in Hospital Practice*; by GEORGE W. CALLENDER, F.R.S. This is meant as a supplement to a paper contributed by the same author to the fifth volume of the "Reports" (see No. of this Journal for Jan. 1870, p. 196), and may be regarded as a last word on the subject of hospitalism; Mr. Callender here tabulates twenty-five consecutive cases (all successful) of amputation, which have been under his or Sir James Paget's care since May, 1869, and adds:—

"If amputation statistics are to be relied upon, no stronger evidence could be given of the healthy condition of the hospital wards during the three years to which the above figures relate."

The last of the surgical papers is a *Case of Popliteal Aneurism, for which the femoral artery was tied with carbolized catgut. Subsequent death from hemorrhage*; by LUTHER HOLDEN. This case is one of much interest and importance, in view of the claims which have recently been advanced on behalf of carbolized catgut as a safer material for ligatures than silk. Pulsation in the aneurismal sac recurred the day after the operation, and fatal bleeding from the point of ligation took place on the night of the eighth day. At the post-mortem examination no clot was found in either the proximal or the distal portion of the artery, and the ligature itself had entirely disappeared. The candour and accuracy with which the details of this important case have been made public, are, in our opinion, highly honourable to Mr. Holden.

The present volume of the "Reports" terminates with the customary lists of officers and members of St. Bartholomew's Hospital and College, followed

by an Index, and (in the form of an Appendix) by *Statistical Tables of the Patients under Treatment*, during 1871, compiled by the medical registrar, W. AINSLIE HOLLIS, M.D., and the surgical registrars, J. ASTLEY BLOXAM, F.R.C.S. and H. SYMONS, M.R.C.S. These tables are as usual very elaborate and valuable, the medical report occupying over twenty, and the surgical report over sixty pages. The latter contains sub-tables, giving details of cases of fracture and dislocation, the causes of death in all cases which proved fatal, details of surgical operations, etc. From the last we learn that seven cases of amputation terminated unfavourably during the year, so that it would appear that Mr. Callender's colleagues are not all as successful as himself.

We are glad to notice that almost all of the surgeons who are actively engaged in hospital practice at St. Bartholomew's, have contributed to the present volume of Reports, but regret to observe, on the other hand, that but three of the eleven physicians have done likewise; still the volume, as a whole, probably represents pretty fairly the work of the hospital, and that it is a volume of considerable interest our readers can readily see from the abstracts which we have given of the various papers. There is, however, one criticism to which it is, we think, fairly open, and this is that it contains too many scraps and detached cases. We must be allowed to express a hope that future volumes will contain more of those exhaustive papers, founded on long series of cases, which hospitals alone can furnish, such as have always formed a prominent feature in the Guy's Reports, and indeed such as adorned some of the earlier volumes issued by St. Bartholomew's itself. J. A., JR.

ART. XXI.—*Transactions of the Obstetrical Society of London*. Vol. XIV. For the year 1872. 8vo. pp. 387. London: Longmans, Green, & Co., 1873.

THIS volume records the proceedings of ten meetings of the Society, and embraces a list of twenty-six monographs presented by its fellows.

On the Treatment of Empyema in Children, by means of Subaqueous Continuous Drainage, by W. S. PLAYFAIR, M.D. This paper is chiefly valuable, as an evidence of the utility of establishing a continuous drain upon the collection of pus in the pleural cavity, so arranged as to prevent the entrance of air, without interfering with the exit of the purulent fluid: and contrasts the results with those obtained by the "aspirateur," which can only be used interruptedly. The following is the author's method.

"All that is required, is about six inches of the ordinary fine drainage tubing, and about six feet of ordinary caoutchouc tubing. These are attached to each other by about an inch of glass tubing, over each end of which one extremity of the tube is passed. The free extremity of the drainage tube lies within the cavity of the pleura; that of the India-rubber tube passes through a perforated cork into a bottle half filled with water." [An engraving represents the apparatus as composed of a short vulcanized tube, long black-rubber tube, and a salt-mouthed, flat-bottomed pint bottle, graduated in ounces, to measure the amount of discharge.] "The mode of using the apparatus is as follows: In a case of suspected empyema, a puncture is first made with an exploring needle, to determine the fact of the contained fluid being purulent. For this purpose nothing is better than the ordinary syringe for subcutaneous injection, which resembles a pneumatic aspirator in miniature. Should it prove to be so, a trocar is passed in, the canula of which is of sufficient size to admit of the passage of the drainage tube. As soon as there is a free flow of pus, this is passed into

the pleural cavity through the canula, which is then drawn over it. An assistant now pinches the tubing close to its entrance into the chest, to stop the flow of pus through it, until the other end of the drainage tube is attached to the small piece of glass tubing. The pus is now allowed to flow into the bottle of water, and the drainage tube is attached to the chest by passing round it a loop of fine wire, which is fixed by strapping. The tube remains permanently in the pleural cavity, and any pus that is formed, drains away at once. . . . The tubing did not seem to incommode the little patients in the least, who moved about in bed, played, sat up, and turned from side to side, without the least difficulty, and without even disarranging the apparatus."

CASE 1.—"Girl, aged 6, heart displaced from effusion in left pleural cavity. Dyspnœa urgent; ordinary paracentesis resorted to, with discharge of about a pint and a half of pus. Pleura refilled in eleven days, and dyspnœa worse than before; threatening to discharge spontaneously under left clavicle. Operation by subaqueous drainage adopted, and performed, with the exit of nearly a quart of pus. Next day much improved, and swelling under clavicle disappeared. For a few days about three ounces of pus were discharged daily, and for some days more, about an ounce. No bad symptoms at any time. Apparatus removed on 22d day, and wound soon afterwards closed. Lung expanded completely, and there was no subsequent deformity beyond a little flattening under left clavicle.

CASE 2.—"Boy, 4 years old, operation with similar result—tube removed in 13 days—treatment by Dr. Hilton Fagge.

CASE 3.—"Under same care. Boy, 3½. A pint of pus discharged at the operation, and about twenty-five ounces more by the next day. Tube removed in seven days, no pus having been discharged for some time. Termination very favourable, 'with good breathing over the whole of the left side,' in two weeks.

"In contrast with this, Dr. Playfair presents the following cases reported by Dr. Bouchut, in the *Gazette des Hôpitaux*, as the results of the treatment by the 'aspirateur.'"

CASE 1.—"Boy, 10, extensive empyema—operations commenced February 18th, and repeated at the end of first and second weeks; three times in May—nine, in June—in July, every third day; discharged cured on August 20th, with considerable chest deformity, after thirty-three operations.

CASE 2.—"Boy, 8. After six operations a hydro-pneumo-thorax formed. After nine months of treatment the child is still uncured, and is now tapped twice a week, and has some pus drawn off.

CASE 3.—"Boy, 7, extensive effusion, chest filled up in two days after use of aspirateur; at second trial, tube became blocked up, and had to be removed and replaced several times. Bouchut intended to make a long free incision into one of the intercostal spaces on the next day, but child died during the night. His opinion was, that the lung was bound down by adhesions, which prevented its expanding to drive out the pus."

Dr. Fagge recommended that the tubing should be of the same size as the canula, and introduced upon its withdrawal, instead of through it, so that the tube may be made to fit tightly in the opening through the chest-wall. He, and Mr. Taylor, reported each an additional case, with favourable results.

On the Probable Origin of Certain Forms of Cystic Diseases of the Ovary.
—ALFRED MEADOWS, M.D., presented the following case: "Single woman, aged 29, cyst removed, unilocular, thin, and non-adherent; contained one and a half gallons of fluid; removed by tapping, and drawing out through an incision of three inches; pedicle tied and returned. Patient made a rapid and complete recovery. Tumour found to be formed 'as it were, at the root of the ovary . . . developed at its attached border, the rest of the ovary, including the whole of its free surface, being perfectly independent of the one cyst.' The ovary, with several Graafian follicles on its surface, was found on one side of the cyst, and almost independent of it, the latter being, as it were, developed in the folds of the broad ligament at the root, or attachment of the ovary. The Fallopian tube appeared to encircle the tumour for at least the half of its

extent, and a wire could readily be passed from its fimbriated extremity around to its cut end. The fimbriæ could also be traced in an exceedingly stretched and attenuated form over the cyst from the end of the tube nearly up to the ovary itself, fibres being spread in all directions, but with a general direction towards the ovary."

Dr. Meadows advanced the opinion, that in this case the tumour was formed from a Graafian follicle, which, instead of making its way from the centre to the free surface of the ovary, to be grasped by the fimbriæ of the Fallopian tube, had taken a contrary direction toward the attached border of the organ, whence not being able to escape, it had gone on developing, by reason of the formative power inherent in it, thus giving rise to a serious structural lesion in the ovary itself. In proof of this, it was also noted, that the cyst was lined with an epithelial layer similar to that found in the Graafian follicles or cavities, which are indicated on the surface of the ovary.

Case of Vaginal Thrombus, by ROBERT JALLAND, M. R. C. S.—Primipara, 20, unmarried, twin pregnancy, in labour ten hours, pains feeble, first child delivered by forceps, second came unassisted by the breach; thrombus of posterior vaginal wall as large as a fist now discovered; this burst, with profuse hemorrhage, leaving a laceration two inches and a half long; all other means failing, the hemorrhage was finally controlled by digital compression kept up for more than half an hour, and the patient made a good recovery.

The points of interest are: 1. "The moderate size of the varicose tumour, and the absence of further enlargement during the progress of labour." 2. "That it offered no hindrance to the expulsion of the child." 3. "That there was no apparent increase in its size until the placenta were expelled." 4. The rapid enlargement, and rupture which ensued upon the contraction of the uterus, and the sudden influx of blood into the vaginal plexus of veins.

"*On Retroflexion of the Uterus as a frequent cause of Abortion.*"—J. J. PHILLIPS, M.D., remarks, that numerous observations had convinced him that the chief cause of frequent abortion, was a displacement of the uterus backward.

"It is not very uncommon to notice the ascent above the pelvic brim about the third or fourth month of a previously retroflected uterus, especially when certain precautions are observed by the patient, and indeed occasionally under conditions apparently most unfavourable for its restitution. Nevertheless, making due allowance for cases terminating thus favourably, retroflexion of the uterus appears to be so efficient a predisposing cause of abortion that it should occupy a leading position in an enumeration of the local disorders tending to the production of this accident.

"A not unimportant factor in the production of abortion may be found in the interference with the uterine circulation in some cases of marked retroflexion, tending to the effusion of blood between the uterus and the placenta, and this in its turn exciting uterine action, or leading to the death of the ovum."

CASE 1.—"Age 30, six abortions between end of second and end of third month, in three years; uterus found retroflected; Hodge's pessary employed; woman became again pregnant; pessary worn until end of sixth month; patient delivered at full term.

CASE 2.—"Age 35, mother of 6 children at term; aborted twice in one year, tenth week; uterus larger than natural and retroflected; treatment and result as in the former instance."

Where pregnancy has occurred before the commencement of treatment, the author recommends the resort to a horizontal position either upon the face or side, and attention to the bladder and rectum.

The presentation of this paper gave rise to a very long discussion, the general opinion being in concurrence with the views of the author, both as to cause and treatment.

Placenta Prævia without Hemorrhage at the time of Delivery.—Dr. JOHN BASSETT relates the following case: Mrs. P., mother of several children, attacked with uterine hemorrhage April 4th, 1871, and again on 13th; delivered on May 28th, after a labour of eight hours, with merely a draining of blood. Placenta oval, with smaller end over os, the covering portion having become whitish, dense, consolidated, and nearly bloodless. Child living, a male, of full size, but very thin.

Fibro-Cystic Disease of Uterus and Ovaries. Extirpation, recovery, by THOMAS BRYANT, M.R.C.S.—Subject of operation single, aged 26, and believed, prior to the opening of the abdominal cavity, to be afflicted with an ovarian cyst simply. No adhesions; ovaries as large as walnuts; whole diseased structure removed, broad ligaments being secured separately, and uterus ligatured in halves at its neck. Whole mass weighed $8\frac{1}{2}$ pounds; cervix clamped after being ligatured, as an additional security. No bad symptoms, clamp off on fourteenth day, wound healed in three weeks, and patient about in a month.

Similar errors in diagnosis have so frequently been made, that it is believed impossible, even with every precaution, always to avoid them. It is seldom, however, that extirpation of the uterus is attended with such favourable results. Dr. W. F. Atlee, of this city, has reported a nearly similar case, in which the diagnosis was in error, the uterus extirpated, and the recovery safe and rapid.

On the Treatment of certain forms of Menorrhagia and Uterine Hemorrhage by means of the Sponge Tent, with special reference to their Occurrence in Women residing in Tropical Climates, by GEORGE GRANVILLE BENTOCK, M.D.—This monograph is intended to show the value of the sponge tent, in the treatment of menorrhagia, the result of chronic hyperæmia, after the usual remedies employed have failed; and three typical cases are reported, all in women having borne children, two of whom had resided in India. The author makes his tents of a sponge of medium texture, and without mucilage, first moistening it with a watery solution of carbolic acid, one in twenty, and finishing with a coating of one part wax to three of lard, covering not more than one half of the tent. He thus describes the condition for which he recommends the use of this form of treatment.

“The condition is one of relaxation of the tissues of the uterine body to some extent, but especially of the mucous membrane lining the cervical canal, and probably that of the uterine cavity, if I may be allowed to adhere to the established nomenclature for the sake of convenience, without prejudice to the question whether it be a distinct membrane or a layer of soft tissue. This state of relaxation permits congestion or stasis of blood to take place in the vessels of the submucous tissue (or layer of soft tissue), which, deprived of their necessary support, readily pour out their contents either under the influence of the menstrual molimen, or any influence acting locally or generally, and leading to congestion of the pelvic organs in their entirety, as occurs in the somewhat analogous case of hæmorrhoids.”

“As a rule there is decided leucorrhœa, but I have never seen the os and cervical canal blocked up with glairy mucus, so characteristic of the so-called *catarrh* and inflammatory conditions of the uterus. Nor is there any increase of temperature.

“The mode of action of the sponge-tent is probably mechanical as well as vital. It acts mechanically by compressing the mucous membrane and its vascular system, emptying the over-distended vessels, and removing the redundant epithelium; vitally, in restoring tone to the flabby bloodvessels by relief of over-distension, and in exciting growth of healthy tissue. Simple compression by the tangle-tent is not sufficient for these purposes; the tent attains its maximum dilatation in a few hours, and on its withdrawal the granulations spring up again by mere force of elasticity. It is well known that the tangle-tent produces less irritation than the sponge, but this is its disadvantage. In

the case of the sponge-tent the pressure is exerted more slowly, more gently, more continuously, and more efficiently; the interstices of the sponge become interlocked with the inequalities of surface presented to it; pressure is exerted on the bases of, and between the granulations, as well as on their summits, and thus their complete destruction is brought about."

Dr. Aveling remarked that "he had found arsenic to be of the greatest service in the treatment of this hyperæmic condition of the uterus, and would recommend its trial before having recourse to tents, the use of which he and others had known to be followed by a fatal result."

Inversion of the Uterus after Childbirth, in a Primipara, treated by Amputation, by J. HALL DAVIS, M.D.—Woman married, 22; came under observation ten months after delivery, when greatly exhausted by uterine hemorrhage, and too much prostrated to endure replacement of the organ by persistent elastic pressure. In consequence of this belief, the uterus was cut off by the écraseur, its fundus and the upper two-thirds of its body being removed. Severe pains and great prostration followed, but the woman ultimately made a good recovery, being discharged on the thirty-second day. The peritoneal cavity was not opened at the point of excision.

On the Essential Cause of Dysmenorrhœa, as illustrated by Cases of Partial and Complete Retention.—Dr. ROBERT BARNES proposes in this paper to search for the essential condition of dysmenorrhœa by the study of the various circumstances under which this symptom may arise. The analysis of these various circumstances may enable us to discover one condition which all or many have in common; that one condition will be the essential cause.

"I think observation warrants this general conclusion. The healthy well-formed uterus is rarely an '*irritable uterus*,' or associated with dysmenorrhœa. Or the case may be stated as follows: For menstruation to occur healthily and easily, the genital canal, from its commencement at the fimbriated extremity of the Fallopian tubes to the vulva, must be freely pervious. In the course of this canal there are three natural constrictions, namely, at the os uterinum of the Fallopian tube on either side, at the os internum uteri, and at the os externum uteri. It is at these points, especially, that difficulty is apt to arise. But if extreme narrowing occur at any other part of the canal, as in the vagina, similar results will follow. If the closure be complete, and menstruation takes place, of course there will be retention. If the closure be incomplete there will be partial retention, the expression of which is dysmenorrhœa." "We shall find in this study, endless illustrations of the proposition that one essential condition of dysmenorrhœa is *retention of menstrual secretion*."

Whether the blood be retained in the cavity of the uterus after secretion, or in the tissues of the organ, producing distension of its bloodvessels before secretion, and consequent painful sensations in each instance, the cause is the same, there is a difficult excretion.

The first case given as an example (being one of vaginal occlusion), in our opinion, can scarcely be regarded as one of *dysmenorrhœa*, under the accepted meaning of this term.

"Another cause of dysmenorrhœa, and of hemorrhage, is the fixing of the uterus by perimetric deposits, coming on after labour or abortion, or other conditions. The fixing of the uterus, although commonly attended by patency of the cervix, seems to me to cause dysmenorrhœa, by preventing the uterus from contracting, and also by favouring engorgement of its tissues."

Fibroid tumours; the exfoliated membrane in dysmenorrhœa membranacea; extrusion of clots, or of blood thickened by catarrhal mucus, are among the causes enumerated as giving rise to painful menstruation.

"We meet with cases every now and then in which the dysmenorrhœal symptoms are very severe, although there is no obvious stenosis. In some of these I have found the uterus small, perhaps inclined to one side, set in a short non-

dilatable vagina; sometimes the os externum is preternaturally small, but even after freely dilating this the dysmenorrhœa persists."

These cases are attributed to imperfect development, and a highly nervous temperament, acutely sensitive to pain.

We regard the discussion upon Dr. Barnes's paper as of more value than the monograph itself, and regret that we cannot give it in full. Dr. Playfair regretted that Dr. Barnes's idea with regard to the unity of origin in dysmenorrhœa could not be sustained by clinical facts. He believed in the mechanical theory as applied to a large number of cases, "but besides these, he was inclined to think that there are a far larger number of cases than Dr. Barnes allowed, where nothing of the kind can be found." He instanced the case of congestive dysmenorrhœa, and denied that there was any menstrual retention in the ordinary sense, remarking that "there is all the difference in the world between pain which results from the efforts of the uterus to expel what is practically a foreign body in its cavity, and pain which results from the presence of an undue amount of blood in the vessels of the organ." Pain of this latter class he attributes to tension, as in a gum-boil, or other swelling, relieved by loss of blood. He attributes the cause of dysmenorrhœa in such cases to some local condition of the uterus giving rise to congestion; and remarks that the cervical canal is in many instances found morbidly patulous, instead of constricted. He refers also to a class of non-uterine cases, in which the seat of trouble appears to be in the ovary, and connected with the changes it undergoes during menstruation.

Dr. Snow Beck also remarked upon the paper at considerable length, holding views in correspondence with those of Dr. Playfair; and so also did Drs. Rogers and Felt. Mr. Spencer Wells believed that a large proportion of cases was mechanical, and could be cured by removal of the obstruction.

Cæsarean Section in 1866; Subsequent Pregnancy and Delivery per vias Naturales; Recovery, by WILLIAM NEWMAN, M.D.—We notice this report on account of its rarity, the operation in question being seldom performed upon subjects capable of natural delivery. The cause for the operation arose from the condition of the uterus, which was indurated and contracted in its cervix, being apparently the seat of epithelial disease. Five years subsequently the woman was delivered by the forceps, after a labour of two days' duration, delay being occasioned by the cicatricial condition of the os uteri.

Dr. Barnes doubted the correctness of the diagnosis, that the case was one of malignant disease. Dr. Playfair held the same view, and related a case of Cæsarean section operated upon because of the pelvis being blocked up with exudation, probably from pelvic cellulitis. Dr. Rogers took the view of Dr. Newman, and reported a case in which delivery was accomplished after seventy-two hours of labour through a thick, rigid cervix.

The Anatomy of the Human Placenta, by J. BRAXTON HICKS, M.D.—This is an old subject, treated *de novo* by a master hand, who, not satisfied with the investigations of Hunter, Reid, Goodsir, Priestley, Van der Kolk, and others, has chosen (aided by the advantages afforded him for histological research over many of his predecessors) to examine for himself, and confirm or reject their conclusions, according as he should find them correct or incorrect. In a letter to the reviewer, written a month before he presented this monograph, he says: "I am about to bring out a paper on the Anatomy of the Placenta, which may produce some impression, were it not that our folk are very wedded to Hunter's sinus system." We hope that no such previously formed opinion will in the least interfere with a proper investigation of the claims presented

so fully and fairly by Dr. Hicks, which must be examined in the original article to be properly appreciated, as we cannot possibly do justice to so elaborate a paper, in the short space allotted to us. The aims of the author are expressed as follows:—

“I shall endeavour to describe the anatomy of the placenta, discussing, at the same time, the probabilities of a sinus system, and in doing so I shall: 1st. Criticise the arguments used in favour of a sinus system. 2d. Endeavour to show that if a sinus system exists, there is no period of a transitional state. 3d. That from dissections, early or late, in pregnancy there is no evidence of the existence of such a system. (a) That there is no blood normally in the intervillal space; (b) That no openings from bloodvessels into that space exist; (c) That the *curling artery* expands itself by its ramification into the decidua of each lobule. 4th. Describe the anatomy of the placenta and its growth, as shown by dissection. 5th. Advance arguments against the sinus system, drawn from pathological conditions.”

A careful examination of this paper has satisfied us that Dr. Hicks has thoroughly investigated the question of the vascular character of the placenta, and its relations to the uterus and maternal vessels, in order to determine the manner in which the osmotic nutrition of the fœtus is effected, and has established the points claimed in the extract just given. There is nothing specially new in the views of Dr. Hicks, as they have been advanced by a number of English and Continental writers; but the thoroughness of the anatomical investigations by which he has established his opinions, and confirmed the views of those who opposed the sinus system of Hunter, entitles him to the gratitude of his medical brethren, for having given the *coup de grace* to a long-vexed question.

Short Account of the Cases of Three Sisters in whom the Uterus and Ovaries were Absent, by Dr. CHARLES E. SQUAREY.—In all three subjects the vagina was short, and ended in a cul de sac; the mammæ were developed; and the marks of puberty generally existed, except that they had not menstruated. Their ages were 16, 18, and 26 years. No trace of uterus or ovaries could be felt. Dr. Phillips reported the cases of two sisters. Dr. Rogers had examined three similarly affected subjects. The general opinion prevailed that the ovaries existed in all such cases (although they could not be felt), as there were the marks of womanhood in the general tastes and feelings of the cases, contour of body, and sexual desires. Many instances are upon record of this peculiar malformation affecting two or more members of the same family, as there are also of other sexual deformities, such as hypospadias, etc.

Long Delay of Labour after discharge of the Liquor Amnii, by J. MATTHEWS DUNCAN, M.D.—M. S., æt. 22—third pregnancy—conception presumed to have taken place near the end of October. On March 10th a copious discharge of liquor amnii took place, with slight irregular pains. The fluid continued to discharge freely, but not constantly, until, at the end of a fortnight, the uterus was as hard to the touch as a fibroid tumour. Regular pains came on April 25th, child delivered alive, and by the breech, but lived a very short time. It had the characters of a six months' fœtus, and weighed an ounce less than two pounds. The position, limbs, and features of the child, especially the ears, showed signs of compression. The placenta was natural; there was no gush, and little discharge of liquor amnii; the membranes were natural, and were ruptured at the anti-placental pole of the ovum.

Query: Why did the woman not miscarry until the expiration of forty-five days; or the fœtus die, in a uterus so contracted?

“The survival of the fœtus,” in this case, “is certainly very remarkable, and it would, no doubt, have been impossible, if the uterus had been firmly and actively contracted. Firm tonic muscular action of the uterus after discharge of

the liquor amnii would, no doubt, soon destroy foetal life, and it would also lead, without much delay, to evacuation of all the uterine contents. That this was not firmly and actively contracted is proved by the absence of labour and the continuance of foetal life."

Dr. Barnes accounted for the absence of labour after rupture of the membranes at an early stage of gestation, in the instances where it did not occur, by the hypothesis that the

"Nervous centres had not yet attained that remarkable irritability which characterized them at the full term. There was less ready response to excitatory stimulus. Hence, when the uterus settled down upon the foetus, the contact failed to excite, in the non-irritable nervous centres, active reflex contractions, as it almost surely would do at term. The necessary irritability seemed to be acquired in women in whom labour was habitually induced prematurely."

A Case of Uterine Fibroids complicating Labour, by HENRY M. MADGE, M.D.—Primipara, æt. 40; spare, but healthy; examined when pregnant five months; and eight uterine fibroids, varying in size from a walnut to a large orange, three of them being pedunculated, were detected. Labour very slow and tedious; forceps used; subsequent contraction and involution tardy. At the end of three months, uterus still enlarged, and all tumours could be felt. In six months three had disappeared, and four were reduced about one-half. In sixteen months, largest tumour not much reduced; two still easily felt, and but traces of the remainder.

This case is chiefly valuable for its positive evidence of the power of spontaneous reduction and absorption of fibrous tumours of the uterus.

On Post-mortem Parturition, with reference to 44 Cases, by J. H. AVELING, M.D.—This is a record of cases which belong to the curiosities of medical experience; many of them, especially the more ancient, savouring very much of the fabulous, particularly as to the duration of the life of the foetus in utero, after the decease of the mother. That a foetus may be expelled with its secundines, some hours after death from labour, and generally by gaseous force, cannot be questioned; but that such children are ever born alive may well be doubted, particularly when there is abundant evidence to prove that the foetus, only in very rare instances, survives even as long as half an hour. The late Prof. Chapman, of this city, once attended a lady who died in labour, in whose abdomen there were evidences of foetal life for half an hour after death. He was very anxious to open the woman and deliver the child, but the husband and family opposed the resort to the knife upon her. In cases of very sudden death, as from apoplexy during labour, occurring in the height of summer, rapid decomposition may, by gaseous evolution, force the foetus from the uterus at a comparatively early period, but scarcely so early as to make it at all probable that in any instance the child should still be alive. We cannot endorse Dr. Aveling's sixth conclusion, page 255, viz., that "after the death of its mother, a child may continue to live in the uterus for many hours," unless we have better authority for it than any he has given us. This appears by the discussion of the paper to have been the opinion prevalent at the meeting at which it was presented. The history of post-mortem Cæsarean operations sustains us in our opinion.

Case of Pelvic Hæmatoma, or Retro-uterine Hæmatocoele, with Remarks, especially as to the source of the Hemorrhage, by T. SNOW BECK, M.D.—Woman aged 40, married several years, but never pregnant, catamenia profuse; seized with severe pain in lower part of abdomen during menstrual period, with profuse discharge of blood accompanied with large clots. Face pale, skin cool, pulse 80, soft, regular; oval lump in hypogastrium, firmly pressed against walls of abdomen; dulness on percussion over whole pelvic region. Orifice of uterus

found high up against the pubes, and body in contact with abdominal walls; a soft elastic swelling bulging forward the posterior wall of vagina in the recto-vaginal pouch; no tenderness during examination. Menstruation nearly ceased in five days after attack of pain; no indications of inflammatory action. On eighth day sudden discharge of dark fluid blood and clots from rectum, and again next day, in defecation; after which gradual recovery took place.

Where did the effused blood come from, and into what part was it effused? In the opinion of Dr. Beck, it arose from the rupture of a varicose vein, and occupied the loose cellular tissue in the broad ligament, and immediately surrounding the middle and lower part of the uterus.

"The effused blood is said to come from various sources, but practically it comes from only three . . . 1, rupture of an ovary which has previously undergone some process of degeneration, and been partially converted into soft, dark-red tissue, capable of pouring out a considerable amount of blood; 2, rupture of a Fallopian tube, or an escape of blood from the congested vessels of the part without any apparent lesion of their coats . . . 3, rupture of some varicose vein.

"It is more than probable that one of the pelvic veins gave way in the case recorded, considering the great amount of congestion which was present at the lower part of the rectum, and the pain deep in the left iliac region, which for some months had increased after each catamenial period, was very severe, immediately preceding the extravasation, and suddenly ceased when it took place."

Dr. Beck does not hold to the opinion of Sir James Simpson, Drs. Meadows, Barnes, and others, that blood may regurgitate during menstruation from the uterine cavity, along the Fallopian tubes, and escape into the peritoneal cavity, provided the fluid be excessive, and meet with some impediment to its free discharge. He takes up and discusses the cases reported by Dr. Barnes in the St. Thomas's Hospital Reports, in proof of the correctness of his position, and does not see in them anything to warrant the opinion of "*reflux along the Fallopian tubes*," . . . except in those cases where there has been permanent obstruction to the outward flow of the menstrual secretion and consequent great distension with enlargement of the uterine cavities.

Considerable discussion followed the reading of Dr. Beck's paper, showing great differences of opinion upon the points at issue, and the obscurity of diagnosis in pelvic affections, where there are collections of blood, serum, or pus; or where the enlargement is due to other causes.

Statistics of Stillbirths, by FRED. W. LOWNDES, M.R.C.S.—We refer to this valuable paper only, as from its tabular nature we cannot give a condensed abstract of it: suffice it to say, that continental statistics show a general average of rather less than 5 per cent., and that the percentage is lowest where the number of forceps cases is the highest. Dr. Playfair referred to the success of Dr. Hamilton, of Falkirk, who had not a case of stillbirth in 731 consecutive labours; his practice being to apply the forceps in one out of every seven or eight cases, and not to permit any unnecessary prolongation of the second stage.

Remarks on the Treatment of some Forms of Extra-uterine Gestation, by ALFRED MEADOWS, M.D.

The mode of dealing with the Placenta, where Gastrotomy is performed, in order to remove the Fœtus in Extra-uterine Gestation, by ROBERT BARNES, M.D.

We associate these two articles together, as the appearance of the first caused the preparation and presentation of the second. Dr. Meadows presented the history of a case of a woman aged 23, on whom gastrotomy was performed, when suffering apparently from labour pains; and a fœtus of the size of seven

months removed. Whilst the placenta was being taken away, the hemorrhage was such as nearly to cost the patient her life; but it ceased as soon as complete detachment was effected. The cyst was next partially removed, a large part remaining on account of firm adhesions; and the wound was closed. The woman died of exhaustion in five hours, and the child on the next day.

In commenting upon this case and its result, Dr. Meadows recommends that in such operations the placenta should be allowed to remain, and the cyst left undisturbed, in order to avoid hemorrhage, which was the cause of death; and leave them to future atrophy and absorption.

Dr. Barnes remarked that this mode of practice had been settled by experience, and had the sanction of Ramsbotham. Dr. Protheroe Smith recommended to reduce the tension of the cyst by the aspirateur. Dr. Madge favoured the non-removal of the placenta. Dr. Edis recommended the operation, where practical, *per vaginam*.

Referring to the above remark of his, Dr. Barnes, at the succeeding meeting, presented his views at length, and stated, that

"1st. A perusal and comparison of the recorded cases of gastrotomy in extra-uterine gestation could not fail to convince the reader that the attempt to remove the placenta had proved disastrous, whilst leaving it alone had been followed by fair success."

"2d. Most of the recent operators . . . had taken care not to touch the placenta. This was certainly so in the case operated upon by Mr. Adams under Dr. Ramsbotham's advice. . . . He emphatically insisted that the placenta should not be touched, and the patient's recovery shows the wisdom of his advice."

3d. Mr. Adams, in reporting his operation, remarks: The placenta "ought to be examined by very gentle traction of the funis to see if it is loose and can be removed with facility, otherwise it is better to leave it alone, with the hope that it will be separated, and come away in the discharges."

4th. Mr. Hutchinson, in his collection of gastrotomy cases, discusses the question of operating whilst the foetus is living, and recommends a postponement until after its death. He remarks:—

"The lesson of facts is very strongly in favour of the precepts laid down by Dr. Ramsbotham in Mr. Adams's recent case, not to remove the placenta unless the latter structure be found quite loose."

Hohl, an important German authority, recommends a similar procedure; and so also does Dr. Keller, in relating two cases operated upon by Koeberlé, of Strasbourg, both of which were successful, the placenta having been left designedly *in situ*.

On the Systematic Examination of the Abdomen, with a view to Rectifying Malpositions of the Fœtus, in Cases of Labour.—Dr. ARTHUR W. EDIS proposes to examine the abdomen of every woman, early in labour, to determine the position of the foetus, and if this should be found unfavourable, to rectify it by external manipulation, making pressure according to the exigencies of the case; and only between the pains, if active labour shall have been commenced. He quotes a number of writers upon the subject, and especially from W. L. Richardson, "External Manipulation in Obstetric Practice," Boston, 1871, whose list of advantages may be stated as follows:—

1st. Diagnosis of foetal position before labour, or rupture of membranes.

2d. Examination made more readily and with less discomfort to woman than by the vagina.

3d. Change of unnatural into natural presentation prior to labour.

4th. Version during labour with less danger to mother and child than by the internal method.

- 5th. Cephalic version as readily effected as either podalic or pelvic.
- 6th. Greater facility in preparation for delivery in placenta prævia.
- 7th. Hastening of delivery in case of prolapsed funis.
- 8th. Earlier interference and delivery in cases of accidental hemorrhage, or convulsions.

R. P. H.

ART. XXII.—*American State Medical Societies.*

1. *Transactions of the Medical Society of the State of California during the years 1871 and 1872.* 8vo. pp. 228.
2. *Transactions of the Annual Session of the Medical Society of Virginia, November, 1872.* 8vo. pp. 178.
3. *Transactions of the Medical Society of the State of West Virginia, at its Annual Meeting, June, 1872.* 8vo. pp. 106.
4. *Proceedings of the Annual Session of the State Medical Association of Arkansas, January, 1873.* 8vo. pp. 60.
5. *Transactions of the Wisconsin State Medical Society for the year 1872.* 8vo. pp. 170.
6. *Medical Communications, with the Proceedings of the Annual Convention of the Connecticut Medical Society, May, 1872.* 8vo. pp. 178.
7. *Transactions of the Colorado Territorial Medical Society, at its Annual Meeting, September, 1872.* 8vo. pp. 35.

1. THE ANNUAL SESSION of the *State Medical Society of California* was inaugurated by an address from Dr. H. GIBBONS, of San Francisco, in which the author discusses the improvement in the condition, character, and ethical demeanor wrought in the medical profession of California by a well-devised organization of its members.

The first strictly scientific paper is a very judicious report by Dr. A. B. NIXON, on the treatment of bruised and lacerated wounds, and on the management of fractures of femur by counter-extension and continued extension upon an inclined plane—a plan well known to our leading surgical authorities.

An interesting and instructive paper on *Climatology and Epidemics*, is from the pen of Dr. F. W. HATCH. Though based mainly on local data, it may be studied with profit by physicians of nearly all locations.

Amblyopia Potatorum is treated of by Dr. E. M. CURTIS. Some six cases are related from the phenomena of which Dr. C. is inclined to refer the amblyopia of drunkards to congestion of one or both ophthalmic papillæ, or even atrophy of the optic nerves. "It might be urged," says Dr. C., "that the remote cause of defective vision in the cases recorded, was as much the abuse of tobacco as of alcoholic liquors, as nearly all the patients were great smokers until the eyes became affected. While not disputing the fact that the abuse of tobacco may have had some influence in inducing the amblyopia in some of the cases, yet in a carefully tabulated series of cases of tobacco amaurosis which we owe to the Royal Ophthalmic Hospital of London, we find that nearly all of the patients had used alcoholic beverages, quite a number to excess, yet the four of Dr. C.'s patients who recovered continued to smoke, while all of them gave up entirely the use of intoxicating drinks.

In a supplementary report from the Committee on Obstetrics, Dr. F. W. TODD makes the following important statement: "As far as my observation extends, our State (California) is remarkably free from the terrible diseases

which attend the puerperal state in European countries." In a practice of upwards of 23 years, Dr. T. says he has met with but one case of erysipelatous peritonitis during the puerperal state, and has seen but very few cases of even simple peritonitis in the parturient female. In these there were wanting the well-marked pathognomonic features of the much dreaded and unmanageable form of *true child-bed fever*. The full development and vigour of the woman of California appear to enable her to endure all the pains and difficulties of maternity with singular freedom from consequent injury.

The report on the *Medical Botany of California*, by Dr. W. P. GIBBONS, is chiefly interesting from the testimony presented in respect to the therapeutic virtues of the *Grindelia* in cases of asthma.

A report follows from Drs. A. B. STOUT, S. M. LOGAN, and R. E. STEARNS, the Committee on Cultivation of the Cinchona Tree, and the appropriation of public lands for Botanical Farms, etc., and on the use of the Thermal and other Mineral Springs, in the Treatment of Chronic Diseases. An interesting report, but of an interest chiefly local.

The subject of *Probationary Asylums for the Insane* is very sensibly discussed by Dr. A. B. STOUT.

On *Fractures and Dislocations of the Astragalus*, with illustrative cases, is the title of a paper by Dr. JAS. SIMPSON.

Dr. C. CUSHING advocates the employment of the *Forceps versus Ergot*, as a means of facilitating the birth of the child, under the same circumstances in which the latter is resorted to. With his leading conclusions we are led entirely to agree from the results of our own ample experience.

The history of an *Epidemic Dysentery*, which prevailed in San Joaquin County, California, during the spring and summer of 1871, is given by Dr. F. WALTON TODD.

2. The volume comprising the *Transactions of the Annual Session of the Medical Society of Virginia* commences with the Address of the President, Dr. A. M. FAUNTLEROY, the theme of which is the *vis medicatrix nature*, in regard to which Dr. F. has made some just and very pertinent remarks.

A very able and elaborate report is presented by Dr. A. S. PAYNE, on *Epidemics of Piedmont District, Va.*, for the years 1846 to 1862, inclusive, with remarks upon the Topography, Hydrography, Petrology, etc., of the District; any useful analysis of which would carry us far beyond our limits.

Next in order is the *Report of the Committee on Epidemics of Tide-Water District*, being a continuation of the report of last session on *Paludal Fever*. It is full of interesting facts, but is too extended for our limits.

A similar remark may be made in regard to the report on the Anatomical, Physiological, and Pathological differences between the White and Black Races, and the modifications of the treatment of the diseases of the latter required in consequence—by Dr. T. P. ATKINSON.

Some judicious remarks are made in the next paper by Dr. W. B. GRAY, on the Hypodermic Use of Sulphate of Strychnia, as an Optic Nerve stimulant.

A case is related by Dr. I. S. APPERSON, in which a large pelvic abscess discharged itself externally through an opening in the rectum, followed by the entire recovery of the patient, a married lady, 20 years of age; the abscess forming during confinement.

Dr. WM. D. HOOPER reports a case of *Extra-Uterine Pregnancy*, in which a foetal skeleton was removed by abdominal incision, with entire recovery of the patient, a married lady, 30 years of age, the extra-uterine pregnancy occur-

ring at an early period during her second marriage: remarks are appended as to the pathology and treatment of the case.

A novel case is related by Dr. O. B. JENKS, of Extreme Mobility of the Knee-joint of a New-born Child.

A highly interesting and we think conclusive report follows from the committee appointed to investigate the effect upon the health of women by the use of the *sewing* machine. After a careful accumulation of facts bearing upon the subject, the committee conclude as follows: "From all these facts, remembering that, among so large a class of women as use the sewing machine, engaged in any work, many will be found ailing, and making due allowance for exaggeration and the character of some of the weaknesses ascribed to the use of the machine, we think it safe to conclude: *First*. That fatigue is not disease, and there is no reason to conclude that the use of the muscles employed in machine work for a reasonable time is injurious.

"*Second*. That the machine may be used for four or five hours daily in a family by a lady in ordinary health without injury.

"*Third*. That the damage to health in the factory is due to the bad hygienic conditions (bad air, etc.) under which the work is done, and the natural delicacy of some of the operatives, unfitting them for long-continued labour of any kind.

"*Fourth, and lastly*. That the sewing machine is a great boon to woman-kind, increasing her compensation, protecting her sight, and, in the family, lessening her labours."

Dr. W. D. HOOPER describes a new apparatus for the treatment of *Compound Fractures and Stumps after Amputation*, with eight illustrative cases.

3. *The Transactions of the Medical Society of the State of West Virginia* were introduced by the usual annual address from the President, Dr. I. M. LAZZELL, in which he treats chiefly of the character and duties of the Society, its successful organization, and its influence, if properly conducted, upon the State, and upon the best interests of the community at large.

A report was presented by Dr. B. ROEMER, on the *Meteorology and Epidemic Diseases of the Kanawha Valley*, with especial reference to Kanawha County. The interest of this well drawn up report is mainly local.

Next follows a sensible paper on *Sudden Death in Puerperal Cases*, by Dr. S. L. JEPSON. The doctor examined carefully the principal causes of sudden death, during and after labour, as far as we are able to determine them. An attempt has also been made by him to indicate the predisposing circumstances present in each case, and, in conclusion, offers a few remarks on the subject of *treatment*, especially that which is preventive.

A Synopsis of Insanity is the title of a paper by Dr. A. H. KUNST. The subject is too vast and intricate a one to permit much light to be thrown upon it, in the short space devoted to its consideration by the author.

A case is reported by Dr. E. A. HILBRETH, in which variola and vaccina occurred simultaneously in the same infant, running through their several stages, without exercising, apparently, any influence upon each other. From this case Dr. H. concludes that, to obtain the preventive power of vaccination, it must be performed before the period of incubation of smallpox commences.

Next follows a report by Dr. B. ROEMER, on *Mono-bromide of Camphor*, in which the new remedy is described and its chemical relations determined. Dr. Deueffe, of Ghent (see No. of this Journal for July 1872, p. 292), used it successfully as a sedative for the nervous system in hysteria, insomnia, and the spasms of infants during dentition.

Dr. E. D. SAFFORD presents an account of *Parkersburg Mineral Wells*, the medical virtues of which correspond with those of the Bedford Springs of Pennsylvania. A quart of water from the "Wells" contains—

Carbonic acid gas	. . . . .	16 cub. in.
Sulphate of magnesia	. . . . .	10 grs.
Sulphate of soda	. . . . .	24 "
Sulphate of iron	. . . . .	4 "
Chloride of lime	. . . . .	41 "
Carbonate of soda	. . . . .	4 "
A trace of iodine.		

There is also on the same premises a spring of strong chalybeate water.

By the same gentleman is presented an interesting paper on the *Specific Contagion of one form of Puerperal Fever*, the leading views advanced by him correspond with those we have drawn from a very careful study of the subject.

4. The proceedings of the *Annual Session of the State Medical Association of Arkansas* comprise but few scientific communications that demand especial notice. The first is a novel case of Parturition with Recto-Vaginal Fistula, by Dr. I. A. DIBRELL, Sr. Delivery after craniotomy, followed by recto-vaginal fistula. In a second labour, one lower extremity up to the hip, passed through the fistulous opening into the rectum. Delivery effected by a perineal section. The entire history of the subject of this case is especially interesting.

Next follows the history of a congenital case of *Occlusio-Vaginæ*, by Dr. I. A. DIBRELL, Sr., cured by operation.

5. *The Transactions of the Annual Meeting of the Wisconsin State Medical Society* was opened by an address from the President, Dr. J. FAYLL, on the relation the medical profession holds, and ought to hold, towards the community at large.

The first of the professional reports is that of Dr. W. MEACHER, on *Surgery*. It embraces, 1st, a pyogenic ovarian cyst, removed by gastrotomy; death second day after operation. Next item, a case of *protracted use of chloroform*, for the relief of vesical disease, night and morning, for the space of eight months. Third, an account of the resection, with beneficial result, of the tibia and fibula, in a case of viciously united fracture. The fourth item is an account of a case of senile gangrene.

The report of the chairman of the Committee on Practice of Medicine, Dr. IRA MANLEY, embraces a short notice of diphtheria, its pathology, treatment, etc., of diabetes, of rheumatism, of cerebro-spinal meningitis, of epilepsy, of influenza, and of indigestion. These subjects are treated with great conciseness and may be read with profit by the young practitioner.

By Dr. P. Fox, a member of the same committee, is presented an able paper on *Cerebro-Spinal Meningitis*, in regard to which the same remark may be made.

In a report from Dr. I. I. BROWN, chairman of Committee on New Remedies, he speaks strongly in favour of the chloral hydrate as furnishing us with a reliable hypnotic with no bad after effects; an opinion which is endorsed by Dr. R. M. Wigginton, in a subsequent paper.

Dr. F. H. LINDE reports a case of *Severe Fracture of Skull, complicated with Hernia Cerebri*, with entire recovery at the end of some three months. This is a truly astonishing case.

A successful case of *Ovariectomy* is described by Dr. D. C. DAVIES.

An account is given by Dr. J. C. DAVIS of a case of *Suppurating Pleuritis* in a male child five years of age, in which recovery was effected by *paracentesis thoracis*.

Dr. S. L. MARSTON reports three cases of *Placenta Prævia*, the first terminating favourably after detachment of presenting portion of placenta. In the second death of the mother occurred after delivery with forceps. In the third case recovery took place after instrumental delivery of child, and removal of adherent placenta.

Dr. B. C. BRETT relates a case of *Compound Comminuted Fracture of Tibia*, in a man 21 years of age, with loss of an inch of bone, and fracture of fibula. The fracture healed with half an inch shortened but useful limb.

A sensible paper follows on the use of *Anæsthetics in Midwifery*, by J. B. CORY, M. D. In the next paper, Dr. J. I. BROWN offers some suggestions on the use of anæsthetics, recommending in a case of labour the mixture composed of one part of alcohol, two of chloroform, and three of ether, as in all respects superior to simple chloroform.

An interesting case of *Intussusception* with successful termination, is related by Dr. BROWN. There appears to us to be some doubt as to the accuracy of the diagnosis in this case.

A paper on the *Correlation of Forces in Physiology and Medicine*, by Dr. I. E. DAVIES, is deserving of an attentive perusal. It scarcely admits of any concise analysis. The paper is a very elaborate one on a confessedly complex subject.

Dr. I. H. VIVIAN gives an account of his own case, that of *Fractured Skull with Depression of Cranium*, from which he finally recovered; suffering comparatively few serious morbid results from the injury.

Dr. E. L. GRIFFIN relates a case of *Cæsarean Section* terminating fatally. On autopsy, some twenty-seven hours subsequently, there was revealed a single subperitoneal tumour, having its point of origin and attachment upon the anterior surface of the body of the uterus, lifting in its growth the latter organ into the upper part of the abdominal cavity. Circumference of tumour 30 inches at its largest diameter, and 27 at its shortest. Estimated weight about 30 pounds. The uterus was found firmly contracted, and of the usual size after delivery. No blood, the result of the operation, found in the abdominal cavity.

6. *Medical communications, with the proceedings of the Annual Convention of the Connecticut Medical Society.*

The annual address of the President, Dr. G. W. RUSSELL, notices in brief review some of the "*Causes of Disease*."

The first communication is the *Report of the Committee on Matters of Professional Interest*, by H. A. CARRINGTON, M.D. It comprises short reports from Hartford, New Haven, Middlesex, and Litchfield Counties, giving a sketch of the state of health in each, the character of the prevailing diseases, and more prominent accidents occurring in each.

The second communication, by Dr. H. BRONSON, treats of the *History of Intermittent Fever in the New Haven Region*, with an attempt to distinguish known from unknown causes in its production. This communication presents many points of interest in respect to the etiology of the fever of which it treats.

Next follows a long and elaborate report, by Dr. W. B. DE FORREST, on *Public Hygiene*, which presents a very just view of the leading facts connected with the subject of which it treats.

The fourth communication is from Dr. W. L. BRADLEY on the *Treatment of Puerperal Convulsions*. The subject is discussed with great fairness and ability. To the general views emitted by Dr. B. we feel inclined to add our assent.

The fifth communication, by Dr. H. M. KNIGHT, is upon a very important and as yet but little understood subject, *Hallucinations of Children*. Dr. K. has, we believe, taken the rational and correct view of the subject. The hallucinations of children we have found to be in a great measure the result of a neglect, or of gross errors committed in the early education, moral and religious, of the little patients, easily prevented by a wise early education of the child's mental and moral faculties. Their cure will always be tedious and difficult.

7. *The Transactions of the Colorado Territorial Medical Society* embrace but a few short papers, exhibiting but little elaboration. They are all, however, sensible productions, with a direct practical tendency, conferring great credit upon their writers, labouring as they do under many disadvantages—the sparse population furnishing comparatively slight material, and the remote distance causing them to depend mainly on their own unaided resources of observation.

D. F. C.

ART. XXIII.—*The Science and Art of Surgery, being a Treatise on Injuries, Diseases, and Operations*. By JOHN ERICHSEN, Senior Surgeon to University College Hospital, etc. etc. A new edition, enlarged and carefully revised by the author. Illustrated by upwards of 700 engravings on wood. 2 vol. 8vo. pp. 781 and 918. Philadelphia: Henry C. Lea, 1873.

For nearly twenty years "Erichsen's Surgery" has been a favourite with English-reading practitioners and students the world over, and it may, we think, be safely said, that the majority of American physicians under forty years of age are to-day mainly governed in their treatment of surgical diseases and injuries by the opinions and recommendations of the "Senior Surgeon to University College Hospital, London." Though it is only about four years since a really new and revised edition was issued in England and republished in this country under the editorship of Dr. John Ashburst, Jr., yet Mr. Erichsen in October last brought out the sixth English edition and simultaneously a new American one, endeavoured to be made "more deserving than its predecessors of the favour that has been accorded to them," containing several paragraphs which it is trusted "will be found to increase the practical value of the work." We have found upon careful comparison of the present edition and that of 1869 some changes in the arrangement of subjects; some differences of opinion as to the value, real and relative, of operative and other modes of treatment; some added paragraphs on diseases and operations not referred to before; some enlargements of statistical tables. At the same time there is a very general ignoring of the valuable notes of the American editor of the edition of 1869; the retention of several statements the errors of which have been pointed out by various writers and reviewers during the past four years; the omission of any notice of some valuable therapeutic and surgical measures; and the renewed declaration of views on certain subjects not in accordance with those of

the most recent writers. As this work has been so recently reviewed in our columns (No. for Jan. 1870), we shall on this occasion merely call attention to a few of the changes we have observed, and some of the views still maintained to which we cannot yield our assent.

In the chapter on *Amputations in General*, the vexed question of "hospitalism" is referred to, and we infer that Mr. Erichsen does not believe that the larger the hospital the greater the mortality.

Secondary amputation of the leg is now pronounced more fatal than primary, a declaration contrary to that previously given, but in accordance with the views held by the best modern surgeons, and confirmed by statistics; nearly 600 cases giving four per cent. in favour of the immediate operations.

The chapters on *Inflammation*, *Suppuration*, *Ulceration*, and *Repair*, have been largely recast and many changes made.

In the treatment of inflammation, mention is made of the use of aconite and belladonna, and of the cutting off of the blood supply to the diseased part either by ligature, or, much better, by digital compression, which, "though we may not go so far with Neudörfer as to suppose that it obviates all necessity for constitutional treatment, appears to be a remedy far preferable to local bloodletting."

The "antiseptic treatment by means of carbolic acid" is considered at length and highly recommended, though it is not maintained that it will always accomplish all the good that has by some been claimed for it; indeed the very just statement is made that "theoretically it is perfect; in practice its success is not constant."

Torsion is considered at much more length than previously, but is evidently not a favourite method of procedure with our author, who declares that, "when applied to the principal arteries of a limb, it presents no advantage over the ligature," but only when employed on the smaller arteries, and "when as in plastic operations direct union is of the first importance."

The chapter on *Arteritis* has been both modified and enlarged, the disease being described under the heads of acute and chronic, instead of diffuse and limited, as before, the existence of the diffuse or erysipelatous form being doubted, its symptoms being considered as "dependent on some of the various forms of blood poisoning."

It is asserted that spontaneous cure of aneurism can only take place in arteries of the second and third magnitude, and never in aneurisms of the aorta. That this is a mistake has been shown by Mr. Moxon (*Guy's Hospital Reports*, 3d series, vol. xii.), and we have ourselves seen a case under the care of Dr. Bartholow, of Cincinnati, in which the *post-mortem* by Dr. Whittaker showed laminæ of fibrin, "the thickness of said deposit measuring at numerous points one and one-quarter inches. The outermost layers of fibrin are so completely organized that it is difficult to distinguish them from the true adventitia of the vessel." In this case, though, for weeks before death, the patient had been taking the iodide of potassium and ergotin, yet we believe that, prior to the institution of such course of treatment, nature had been making an effort toward spontaneous cure, the evidence of which was presented in the thickness and high degree of organization of the fibrinous laminæ. No mention is made of the hypodermic use of ergotin in the constitutional treatment of aneurism, except the merest reference to Langenbeck and Dutoit's cases in the paragraph on the treatment of subclavian aneurism.

To the statistical tables of operations upon the several arteries previously published, additions have been made, though even yet the statistics are not as full and complete as might have been expected. For example, the table of

"aneurisms of the innominate treated by ligature of the subclavian only" remains as before, four cases being given; to these should be added at least two more in which the vessel was tied, once by Blackman, and once by Bryant. The table of similar cases treated by ligature of the carotid only, shows nineteen cases instead of the previously given ten, and to this list should be added Ordile's case, and two additional ones by Pirogoff. An increase of four cases appears in the list of ligations of both subclavian and carotid arteries, but no mention is made of Hobart's operation. Of all these operations for the relief of innominate aneurism an unfavourable opinion is expressed; that by ligature of a single vessel being declared unjustifiable, consecutive ligation of the two being practically no better, and the simultaneous closing of the two, while the best of the operations, yet probably no better in the most favourable cases than treatment by proper "palliative and constitutional means."

The table of "cases of ligature of both carotids" remains as before; though it is much to be regretted that the numerous mistakes in it (noticed by the late Dr. Blackman in his review in this Journal for January, 1870), were not corrected before the present edition was published. To the list given should be added the case of the late Dr. H. E. Foote, of Cincinnati, in 1867.

In the list of ligations of the abdominal aorta, we find no mention of Watson's case. It seems strange that of four recent works on Surgery published in London, viz.: "Gant," "Fergusson," "Bryant," and "Erichsen," only Fergusson makes reference to this operation done in Edinburgh, in 1869, and reported in the *British Med. Journal* for August 21, of that year.

Ligature of the common femoral, that five years ago our author thought ought to be banished from surgery, is now more favourably spoken of, though not regarded as preferable to ligature of the external iliac.

In the chapter on *Fractures* the broken clavicle is still recommended to be treated by the useless axillary pad and bandages, not a word being said about the employment of adhesive plaster, which, especially by the method of Sayre, is capable of producing the best of results with the least inconvenience to both patient and surgeon.

Fractures of the thigh are stated to be "frequently cured without any shortening or the slightest apparent deformity;" as was said by the reviewer of the preceding edition, "this opinion is not generally accepted in this country," and the authoritative expression of it by Mr. Erichsen is "especially to be regretted."

In the chapter on *Gangrenous Diseases* no mention is made of the use locally of either bromine or the permanganate of potassa, agents which gave the best results during our late war.

Lymphadenoma, elephantiasis, and lymphatic varix are among the new subjects treated of. For the relief of elephantiasis, ligation of the main artery of the limb is more highly spoken of than perhaps the full history of cases operated on would warrant, it being probable that it is rather temporary than permanent benefit that is received from the operation. In the chapter on "deformities," we find that "Birch, of New York, in 1814," modified Rhea Barton's operation of 1835; it should, of course, have been "Buck, of New York, in 1844."

In performing paracentesis thoracis the "fifth intercostal space at the line of insertion of the serratus magnus" is still recommended as the most convenient spot. Bowditch, in his recent letter to Dr. Allbutt, of Leeds, says, that the best place for tapping is "in a line with the inferior angle of the scapula, and between the eighth and ninth, or ninth and tenth ribs, and at least an inch and a half above a horizontal line drawn through the lowest point at which the respiratory murmur is heard in the other lung."

To the description given of Amussat's method of making lumbar colotomy there might with propriety have been added an account of Allingham's method, which has the advantage of taking a fixed point on the crest of the ilium as a guide to the location of the centre of the oblique incision, viz., a spot "full half an inch posterior to its centre, measured between the two superior spinous processes."

Among the very few changes in the remarks made on "disease of the large intestine and anus," we notice a reference to forcible distension, by the fingers or hand, in spasmodic contraction of sphincter ani, a method of treatment which might with propriety have been directed for the relief of fissure, and which the teachings and practice of Van Buren, of New York, have rendered so familiar to American surgeons.

In the part of the work devoted to the consideration of "diseases of the genito-urinary organs," a number of points have attracted our attention. We have found nothing said about nephritic and perinephritic abscesses dependent upon the presence of a calculus, nor nephrotomy, nor extirpation of the kidney.

In a paragraph on the bilateral operation, Eve is credited with 78 cases, with 8 deaths; in a recent paper that surgeon reports his 90th case, "with a mortality of 8; of the last 45 only 2 proved fatal, these survived nearly two weeks, and died then from causes independent of the operation." In the same paper it is shown that Dudley operated 225 times with a mortality of 7.

Cystotomy is pronounced "certainly a proper procedure in extremely chronic and otherwise incurable cases" of irritability of the bladder. A solution of the sulphate of quinia (gr. j—3j) is recommended as "one of the most useful injections for cleansing the bladder of viscid, ropy mucus." Attention is called to the injurious effects of repeated catheterization, due, it is thought, to the introduction of air which gives rise to decomposition of the urine, or, as others declare, to bacterianism, the organisms being introduced with the air or upon the instrument. Among other methods of treatment of stricture there is described the operation of "opening the urethra *behind* and through the stricture," which it seems to us is not so satisfactory as that of opening the urethra in front of the stricture upon the end of a staff or catheter, and then carefully cutting through the stricture, an operation in many cases altogether to be preferred to any other for the relief of the over-distended bladder.

Considerable attention is for the first time paid to the causes of death during the treatment of stricture, and the post-mortem appearances of the kidney in such cases are detailed at length.

Though uterine fibromata are, as is said by our author, "not very amenable to treatment," still we have accumulating testimony to the beneficial effects of the administration of ergotin.

Mr. Erichsen has noticed most of the "new things" to which the attention of the profession has recently been so strongly called, but some are not fully discussed. Carbolic acid and Calabar bean are referred to; the hydrate of chloral is highly spoken of for the relief of cerebral irritation, in the sleeplessness that is present in the early stages of concussion of the spine, in cases of tetanus, and irritable bladder; ergotin is merely alluded to as having been administered in cases of subclavian aneurism, but no mention is made of it in the treatment of the various hemorrhages, nor for the diminishing of the blood supply to morbid growths. The surgical applications of electricity are but little referred to; the galvanic cautery is spoken of in the treatment of sinuses; the galvanic *écraseur* in removal of the tongue, hemorrhoidal tumours, and *nævi*.

Pneumatic aspiration is mentioned as a diagnostic and curative measure in

some cases of abscess and as a method of tapping the chest ; but is not referred to in the treatment of hernia or the over-distended bladder, nor indeed has the prominence been given it in any part of the book that it really deserves.

"Transplantation of cuticle" is described at some length, and is pronounced "interesting in its scientific aspect, . . . full of promise in its application to plastic surgery, . . . and in many instances of the greatest value in facilitating the cicatrization of large ulcerated surfaces."

Some reference is here and there made to the increase and decrease of temperature in surgical diseases and injuries, but we have seen no notice of the immediate local rise that takes place after ligation for aneurism, nor of the decided and persistent low temperature after extensive wounds, especially penetrating wounds of the thoracic and abdominal cavities. Redard, a year and a half ago, called attention to this subject, and we have ourselves found the thermometer a valuable aid in forming a prognosis in a case of stab-wounds of the chest and abdomen.

The present edition of "Erichsen" is an improvement on its predecessor, but we must confess to a sense of disappointment at finding so many things not mentioned that we expected would be, so many left as before that we confidently thought would have been modified or omitted.

P. S. C.

ART. XXIV.—*The Pharmacopœia of the United States of America.* Fifth Decennial Revision. 12mo. pp. 383. Philadelphia : J. B. Lippincott & Co., 1873.

THIS revision appears after about the usual period subsequent to the meeting of the Convention, in the form of that for 1870, but with an improved appearance in the quality of the paper and of the typography.

There has been, both in the materia medica and the preparations, changes of considerable importance, consisting in the introduction of new articles whose value has been confirmed by the testimony of experience, and the exclusion of such as have either lost the favour in which they were formerly held, or have been superseded by others of more efficiency.

To the primary list twenty-four additions have been made. Some as sources of remedies, others for use as remedial agents, among which may be noted phenyl alcohol, under the more familiar name of Acidum Carbolicum, Cannabis Americana and Indica, Cerii Oxalas, Chloral (its hydrate), Conii fructus, Iodoformum, Physostigma (Calabar bean), with two hyposulphites and four hypophosphites. To Alumen a new meaning is now attached, by designating the ammonia alum as the salt intended, the potassa alum being now Aluminii et Potassii Sulphas ; this seeming to have been done in conformity with commercial relations, as the ammonium being cheaper than the potassium salts, have nearly superseded the latter in the manufacture of this compound.

The only substance dropped from the primary list is Oleum Bubulum, which has been considered in former revisions as the best material for the production of citrine ointment, while four have been transferred to the primary list ; one, Gossypii Radix (the bark only, as the part to which its activity is due), under the name of Gossypii Radicis Cortex.

There has also been transferred from the preparations to the primary list, Acidum Valerianicum and Zinci Valerianas.

In the important consideration, that of defining strictly the nature and

properties and the particular parts intended to be used, much advance has been made in the use of terms more in consonance with the investigations and nomenclature of modern science.

In the chemical nomenclature the most striking difference will be observed in rendering uniform the termination for the metallic radical of the salts, in accordance with the nomenclature some time since so ably advocated as necessary in the subsequent revision of the British Pharmacopœia, by Prof. John Attfield, of London, whose "Practical Chemistry and Pharmacy" has been adopted as a text-book by several of the schools of pharmacy of this country. This nomenclature, though not strictly in accord with any of the modern systems, is well adapted to pharmaceutical purposes, combining simplicity with accuracy, and not varying from that formerly in use, except in the alkaline and earthy salts.

The changes in the preparations are more extensive. New classes are added as additional forms for medicinal use, viz., Chartæ (cantharidis et sinapis), Glycerita five, Succa two, and Suppositoria nine in number.

Among the chemical preparations added may be noted Ammonii Bromidum et Iodidum, Ferri Oxalas, Lithii Citras, Sodii Arsenias, Liquor Arsenici Chloridi, Liquor Ferri Chloridi (four times the strength of the Tinctura F. C.), and precipitated mercuric oxide, under the appropriate pharmaceutical name of Hydrargyri Oxidum Flavum, while the very unstable preparation, and one readily made extemporaneously if desired, Acidum Hydriodicum Dilutum, has been dismissed. To the scale salts of iron one has been added, Ferri et Strychniæ Citras, containing one per cent. of the alkaloid, and in their preparation the temperature of evaporation is restricted to 140°.

To the Aquæ two—A. Anise and A. Acidi Carbolici—are added, the latter containing less than one and a half per cent. of the acid. A separate formula is given for Pyroxylon, and one to prevent its too great contractility is given in collodium flexile, in which Canada Turpentine and Castor Oil are used; the same addition being also made to the Collodium cum Cantharide. The active principle of Digitalis has been made officinal, with directions for its preparation. To the Plasters the only addition is Emp. Aconiti, which is directed to be made from the extract, Extractum Aconiti, the epithet Alcoholicum being dropped from this and nine other extracts of a similar kind where only this form of extract is now recognized. The other alterations in the Extracts are the introduction of one from the American hemp, the former Ex. C. Purificatum now receiving the name, Indiciæ; of another from Calabar bean, Ex. Physostigmatis, and one from the seed of the Stramonium. It is in the fluid extracts that the greatest amount of change will be found, by the increase in the number of formulæ, and while, with one exception, each completed fluidounce of the preparation represents one troyounce of the crude drug, Glycerine in many of them has been made to replace Sugar, and the processes modified and rendered more uniform. In the fluid extract of Conium, muriatic acid is substituted for the acetic acid, as formerly directed. Among the additions may be noted Ex. Bellad. Fl., Conii fructus, Cubebæ, Digitalis, Gelsemii, Geranii, Krameriæ, Pereiræ, Rubi, Scillæ, and Senegæ.

Two have been added to the Liniments; Lin. Aconiti, in which Glycerine is used, and Lin. Plumbi Subacetatis, while the amount of water has been increased in the Lin. Saponis. To the formulæ for Liquores are five additions, with an appendix to that of the Liquor Ammoniac Acetatis, providing for its extemporaneous preparation at the bedside of the patient, where carbonic acid may be a desirable addition. Two of the formulæ contain preparations of Arsenic, L. Sodii Chloridi, and L. Sodii Arseniatis, of a strength uniform with

the solution which has so long retained its place in the pharmacopœias. Liquor Ferri Chloridi is a strong solution, which was formerly prepared as the basis of the tincture, but now made a separate formula. Liq. Potassii Permanganatis and Liq. Zinci Chloridi complete the list.

To the Oleoresins, that of Oleoresina Filicis is the only addition.

To the Spirits, the only addition is Sp. Juniperi.

The change in the mode of preparation of Sp. Ætheris Nitrosi is the most striking point in this class; the process known as that of Prof. Redwood having been adopted. This is more simple than the old process, operating so easily in practice as to be readily used by the pharmacist, who may thus always have a reliable preparation which he may with confidence recommend as fully up to the requirements of the pharmacopœia, and while there is more economy in material, the result is said to be as satisfactory as the best found in the market.

In the Tinctures, the changes are more in the ingredients to which their colour to some extent is due, Saffron and Red Saunders. Tinctura Aconiti Folii has been omitted; and although there is now only one tincture of aconite, the term Radicis is still, for obvious reasons, retained. The additions are T. Aurantii and T. Benzoini.

To the Troches, four have been added, viz., Trochisci Acidi Tannici, T. Morphiæ et Ipecacuanhæ, T. Potassii Chloratis, and T. Santonini.

In the Ointments, that which has been known by the several names of simple ointment and lard ointment has now the single word Unguentum to express it; and, as in its formula yellow has been for pharmaceutical reasons substituted for white wax, is altered in appearance, and affects the colour of some of the others, as U. Hydrargyri Ammoniati and U. Plumbi Carbonatis, of which it forms the oleaginous basis. The additions are U. Acidi Carbolici, U. Cantharidis (Cantharidis Cerate reduced to one-fourth its strength), U. Hydrargyri Iodidi Rubri, U. Hydrargyri Oxidi Flavi (with the same strength as the U. H. Rubri), U. Mezerii, and U. Plumbi Iodidi. Ointment of Oxide of Zinc is directed to be made with Ointment of Benzoin, and this latter to be prepared from the Tincture, the alcohol being driven off by the heat of a water-bath.

In the preparation of Acetate of Zinc, direct solution of the Commercial Carbonate by Acetic Acid is substituted for the decomposition of the lead Salt by Metallic Zinc.

The further additions at the end of tables of the weights and measures of the U. S. Pharmacopœia and of the metrical system, together with the relations of the two systems, will be found very useful and serviceable both to the pharmacist and physician.

ART. XXV.—*A Treatise on Apoplexy, Cerebral Hemorrhage, Cerebral Embolism, Cerebral Gout, Cerebral Rheumatism, and Epidemic Cerebro-Spinal Meningitis.* By JOHN A. LIDELL, A.M., M.D., Ex-Prof. of Anatomy in the National Medical College, Washington, D. C., etc. 8vo. pp. xix., 395. New York: Wm. Wood & Co., 1873.

WE learn from the preface of this book that the author began to prepare from original cases and observations an article for publication in *The American Journal of the Medical Sciences*, but he soon found its length exceeded the

limits of a journal article, and it finally expanded into the octavo volume of nearly 400 pages now before us. After a careful reading of the book it appears to us that, had the author adhered to his original intention and published his own cases, classified, and not surrounded by the sometimes ill-assimilated observations of others, his labour would have been more judiciously expended.

There are a great many faults exceedingly prevalent in the literature of the day, which this treatise has not. It has not the least advertising or commercial flavour about it; it is free from offences against literary taste, and is so evidently a well-meant and honest attempt to contribute the writer's quota to the general stock of professional information that one cannot but consider it a loss to science that points should be deficient, which if complete would have thrown light on unsettled theories, and rendered this book a more valuable storehouse of facts.

The first chapter is principally concerned with definitions and statistics of frequency of apoplexy, and closes with a statement of the varieties of the disease.

Chapter II. adopts Niemeyer's views of the pathology of various forms of apoplexy, and shows that the essential lesion, whether produced by venous congestion, by œdema, or by hemorrhagic effusion, is anæmia, not necessarily in the sense of absolute deficiency of blood in the brain and its membranes, but of deficient supply of oxygenated blood to the air-cells, which may be as completely cut off from their supply of oxygen by venous congestion as by arterial stoppage.

"Nervous apoplexy is, in all probability, an intense form of cerebral anæmia which is suddenly produced by spasmodic contraction of the cerebral arteries, or rather of all the cerebral bloodvessels having a muscular coat."

If this is the true pathology, as seems not unreasonable, the close resemblance between some cases of apoplexy and epilepsy is easily understood.

In the next chapter we have the etiology set forth at length, although the connection between different causes and individual forms of apoplexy is not so distinctly shown as would be desirable. Dr. Lidell is inclined to believe, in a somewhat modified form, in the older doctrine of the existence of an apoplectic constitution or appearances. He also speaks of the undoubted hereditary tendency to apoplexy, and alludes to families where nearly all the members have died of this or kindred diseases.

Chapter IV. is upon the so-called congestive and serous forms of apoplexy, a subject of great interest and importance. Many of the cases detailed by Dr. Lidell were of a class by no means uncommon, especially in hospitals, where a patient, often addicted to liquor, becomes rapidly comatose or is found so, and when after death nothing definite can be found to account for the result.

The writer recollects well being present at the autopsy of two young men, apparently well, but hard drinkers, who were shut up in a station house, one for two or three weeks, the other for one night. The first had been eating abundantly, the second was arrested, "crazy drunk." Both were seen by a physician for the first time on the same morning, one dead, the other dying. The ventilation of the cells, though defective, was very far from being sufficiently bad to render it probable that death had taken place from asphyxia. The autopsies disclosed nothing but some hyperæmia of the brain and redness of gastric mucous membrane.

Cases more or less resembling these are far from being rare, and still further from being in any way satisfactory to the pathologist, but unfortunately this chapter does not clear up our doubts in regard to them.

In many of our author's cases only a moderate excess of blood in the cerebral

and meningeal vessels, a little serum in the meshes of the pia mater, not at all uncommon, certain appearances stated by our author as those of chronic alcoholism, and in others absolutely no abnormal appearances, were noted. How it is possible to call these cases of "congestive apoplexy," or indeed apoplexy at all, unless apoplexy is expected to include all cases of sudden or rapid death not otherwise accounted for, we do not see.

Our author justly condemns the practice of the New York police (which, however, is not confined to them) of considering every person found insensible as drunk, and treating him accordingly. If there is any doubt, the sufferer should have the benefit of it, and be carried to a hospital, or better still, each police station should have a *well-ventilated* room with a bed or beds which can be made comfortable, in which a doubtful case may be placed and get the best chance for life which nature can give him, instead of being confined in the cells and running the additional risks of bad air, a cramped position, and want of assistance. Even if there is no doubt and the patient is undeniably drunk, he has still some claims upon humanity, and it is by no means improbable that a little care may make the difference between drunkenness and such "congestive apoplexy" as we have had described in some cases in this chapter.

Chapter V. is upon cerebral hemorrhage, which, as our author states, is but rarely accompanied by the symptoms known as an apoplectic stroke. He narrates, however, one undoubted case occurring in a woman æt. 49, who fell as if struck by a powerful blow, and was found to have coagulated blood in the arachnoid cavity and in the ventricles. The kidneys were small, hard, and granular.

Trousseau states that he has never seen a case of this kind, so rare is this sudden invasion of cerebral hemorrhage.

To Chapter VII. on nervous apoplexy, cerebral gout, cerebral rheumatism, etc., the author contributes one case of death from "shock," the abdominal cavity having been opened by a cannon ball; and one case of death with cerebral symptoms in acute rheumatism. He says, "I observed that as she grew worse her bodily temperature, as measured by my sense of touch, seemed to increase in a decided manner instead of diminishing, and that when death occurred her skin felt very hot, thus reminding me strongly of some fatal cases of sunstroke which I had seen." No autopsy was allowed. The relations of this case to apoplexy seem somewhat remote.

Infantile cerebral hemorrhage is shown to be a not uncommon affection. We doubt, however, the propriety of calling the cerebral symptoms, even if suddenly developed, coming on at the end of acute diseases, especially of the bowels, by the name of apoplexy.

The chapter on pulmonary apoplexy seems out of place in this book—as the author himself perceives—notwithstanding the fact that extravasation of blood into the lungs does once in a while prove rapidly fatal, and may then be mistaken for cerebral apoplexy, and the observation of Brown-Séquard that certain injuries to the pons Varolii give rise to pulmonary hemorrhage.

The work is concluded by a chapter on cerebro-spinal meningitis, which disease may in its latter stages, in those cases which are fatal in a few hours, counterfeit apoplexy. We find in it, however, but little that is new concerning the pathology and treatment of the disease.

ART. XXVI.—*A Treatise on Relapsing or Famine Fever.* By R. T. LYONS, Assistant Surgeon, Bengal Army. 12mo. pp. xii., 384. London: Henry S. King & Co., 1872.

DR. LYONS announces in his preface that "this work is an adaptation of the chapter on relapsing fever in Murchison's *Treatise on the Continued Fevers of Great Britain to the disease as it has been observed in India.*" If it was really his intention, when he began to write, to note simply the modifications impressed upon the disease by the peculiarities of the climate and people of India, and had he adhered closely to his original purpose, we do not doubt that the book would have been a valuable one. But his aim was evidently a more ambitious one, that of forcing upon his readers the conviction of the complete identity of relapsing fever with the various forms of malarial fever. We use the word forcing, for we have never seen in print a theory which the proposer has taken so little trouble to maintain by argument. Assertion there is plenty of, and the author seems to think, that his *ipse dixit* is sufficient to establish any opinion, no matter how much at variance it may be with that generally held. "I absolutely reject," he says, "the malaria theory of the origin of fevers. It is unworthy of permanence. It calls upon us to believe that the fevers are due to something unknown."

Even if we admit with Oldham¹ or Black² that the so-called malarial fevers are due to chill, there does not seem to be sufficient reason for abolishing the distinction which is usually thought to exist between them and relapsing fever. Murchison, who had probably as good an opportunity of observing the fevers of India as the author, has indicated very clearly the distinguishing characteristics of the two classes of fevers. "No form of tropical remittent fever was ever observed," he says, "where the febrile paroxysm lasted continuously for five or seven days, was then followed by a complete intermission of a week, and afterward, with tolerable regularity on a certain day, by a return of the fever for three or five days." We need not point out to our readers that one disease is contagious, and that the other is not; that in one quinia is powerless to prevent the relapses, that in the other it deservedly enjoys the reputation of a specific, and that the percentage of mortality in the two diseases is very different. The last epidemic of relapsing fever has shown also that there is at least one other important difference between them. It is well known that negroes enjoy in this country a comparative immunity from the effects of malaria, but it will be remembered that in the spring of 1870 the death-rate from relapsing fever was much higher among them than among the whites.³ Moreover, the conditions under which the remittent fevers arise are entirely different from those which the author, in common with other observers, supposes to be favourable for the engendering of relapsing fever. There are many fertile tracts in our Southern country which have been rendered uninhabitable by malaria, and intermittent and remittent fevers have prevailed in the midst of the greatest abundance, and have affected the rich equally with the poor.

We have said enough perhaps to show that there is still ground for maintaining the distinction between remittent and intermittent fevers on the one hand,

¹ What is Malaria? London, 1871.

² Trans. Amer. Med. Assoc. vol. xviii., 1867.

³ At the Municipal Hospital, Philadelphia, the percentage of deaths was, among the whites, 1.6; among the negroes, 25.4.—*Report of the Board of Health, Philadelphia, 1871.*

and relapsing fever on the other. We have said that the author adduces very little argument in support of his startling proposition, and in order that we may not be thought to do him injustice, we will quote the only passage which is referred to in the index under the head of "Malaria":—

"A passing reference is due to the belief that was at one time paramount, but which is now undermined and fast crumbling away, regarding the origin of the special form of fever which is the subject of this work. It was imagined that this disease, which was described under various names, and imperfectly understood, and even hardly discriminated from other forms of fever, was due to malaria, or some subtle atmospheric agency, which was generated under certain physical conditions of locality. It is unnecessary to enter into the reasons which justify the rejection of the malaria theory of the origin of fever."

Dr. Lyons devotes one hundred pages, more than a fourth part of his book, to the history of relapsing fever as it has been observed in India. This would have more value if it were not clear that he had included under this head the reports of epidemics of remittent fever. He seems to us also scarcely justified in regarding the illness of the survivors of the catastrophe of the Black Hole of Calcutta, as being the first instance of relapsing fever occurring in India of which we have a well authenticated account. His principal reasons for thinking so appear to have been the relapse which took place in Mr. Holwell's case—under circumstances of great fatigue—the eruption of boils and the occurrence of swelling of the legs attributed by the sufferer himself to gout, a disease with which he seems to have been familiar from previous attacks. There is no evidence of the disease spreading to those whose company Mr. Holwell was involuntarily forced to keep for some time after his release from the Black Hole.

Relapsing fever as it exists in India does not appear to have differed materially from the disease as it has been observed here. Jaundice occurs in about the same proportion of cases, and hemorrhage from the stomach, occasionally resembling black vomit, is also a rare symptom; but cutaneous eruptions, on the other hand, are of more frequent occurrence. In fact the author makes an eruptive variety of the disease, although it is to be regretted that he does not very distinctly point out the characters of the rash. Murchison has called attention to the fact that in the jaundiced cases the constant scratching sometimes gives rise to an eruption of urticaria, and it may be that our author has observed nothing more than this. Pericardial effusion appeared also not to be very uncommon, having been so prominent a condition in one of the epidemics described in the book that the disease was regarded as epidemic pericarditis.

The book contains some interesting information in regard to the habits of the natives of India, their pecuniary difficulties and thriftlessness, but if the reader wishes to become familiar with the etiology, course, diagnosis, and treatment of relapsing fever, we would recommend him to read the chapter on this disease in Murchison's treatise.

J. H. H.

ART. XXVII.—*Notes on Smallpox and its Treatment.* By W. GAYTON, Medical Superintendent of the Homerton Smallpox Hospital. Pamphlet, pp. 48. London: J. & A. Churchill, 1873.

DR. GAYTON'S position as Medical Superintendent of a smallpox hospital has afforded him abundant opportunities for studying the disease and for observing

the effects which remedies have upon it. In the little *brochure* before us he gives "a concise account of the disease and its complications, and such hints relative to treatment as have suggested themselves in daily experience." The description of the various forms of smallpox is excellent, and the remarks which the author makes as to treatment are judicious, but we do not find many novel suggestions. He is inclined to place some reliance, in cases marked by a high temperature, upon large doses of quinia frequently repeated, recommending in fact that as much as fifteen grains of the sulphate should be given every four hours. He says the effect upon the temperature is very marked, one of 103° or 104° being frequently reduced within twenty-four hours to 100° , 99° , or even to the normal standard. In many in whom recovery seemed hopeless it succeeded in establishing convalescence, but, he takes care to add, it is unwise to extol a remedy which has not yet stood the test of long experience. He has found, in the early stages of the eruption, that a lotion holding the sulphuret of calcium in solution (the *lotio sulphuris cum calce* of the British Pharmacopœia) is a useful application. To insure its success the patient should be rubbed with it over the whole body every four or six hours, and this should be persevered in thoroughly and well until the sixth or seventh day. It acts directly upon the papules, completely destroying them, and thus by preventing their reaching the stage of pustulation the patient has not to undergo the severe secondary fever.

Dr. Gayton is, like all other physicians occupying a similar position, a firm believer in the protective power of vaccination. In summing up his experience on this point he says, "It is clearly seen that those who are not vaccinated die at the rate of more than 37 per cent.; those with one vaccination cicatrix, at above 12 per cent.; with two cicatrices, at about $8\frac{1}{2}$ per cent.; with three cicatrices, at a little over 7 per cent.; with four cicatrices, at $3\frac{1}{2}$ per cent.; whereas, with five or more cicatrices, the mortality is reduced to $2\frac{1}{2}$ per cent." This statement of the results of his observation is not only a strong argument in favour of vaccination, but also in favour of the insertion of the virus in more than one place. It would have been interesting if he had told us how long subsequent to the date of vaccination his patients were attacked with smallpox, more particularly as there is a growing belief in the profession that the protective influence of vaccination diminishes directly in proportion to the length of time which has elapsed since the performance of the operation. Old age and infancy are shown to be the periods of life at which the disease is most fatal, and this is true of the vaccinated as well as of the unvaccinated. No one, it is presumed, doubts the contagiousness of smallpox, but we fancy that our readers will agree with us in thinking that the case in which the author supposes a patient in London to have conveyed the disease to a healthy woman in Dublin by sending her a letter, may be more satisfactorily explained in some other way.

Among the cases reported by Dr. Gayton is one in which tetanus occurred as a complication. A *post-mortem* examination revealed congestion and softening of the brain, and upon the under surface of the pons Varolii, extending along the under surface of the medulla oblongata (where it abruptly ended), was found a thickish layer of concrete pus. On the posterior surface of the medulla oblongata there was a similar layer of pus, which appeared to end at its junction with the cord, the superior two inches of which were free from exudation, but with this exception the posterior surface of the cord throughout its entire length was covered with exudation like that already described. The cauda equina was infiltrated with fluid pus. It does not seem to us unlikely that the case was really one of cerebro-spinal fever, especially as it is said there were only a few variolous pustules on the body.

A pregnant woman is regarded by the author as less likely to take smallpox than one who has just been delivered. The sanguineous plethora which, he says, is usually more or less decided in pregnant women renders absorption more difficult, hence it is somewhat rare to find pregnancy complicated with variola. After parturition, on the other hand, absorption becomes again easy, owing to the plethora being diminished by depletion of the vascular system, and by the comparative emptying of the abdomen caused by the decrease in the volume of the uterus. The difference between the hemorrhagic and the malignant forms of the disease is very clearly pointed out, the details of two cases belonging to the former class being added by way of illustration. A much fuller description of the malignant form than the author gives will be found in a lecture on "The Pathology and Therapeutics of Variola," by Dr. Zuelzer (see abstract at page 534 of the preceding volume of this Journal), by whom the subject is very fully discussed.

The pamphlet contains several charts showing the variations of the temperature and pulse in the various forms of the disease.

J. H. H.

ART. XXVIII.—*A Study of some Points in the Pathology of Cerebral Hemorrhage.* By CH. BOUCHARD, Docteur en Médecine, Interne (Lauréat) des Hôpitaux de Paris, etc. Translated from the French, with notes. By T. J. MACLAGAN, M.D. Edin. pp. viii., 87. Edinburgh: Maclachlan & Stewart, 1872.

AN extended notice of this book seems scarcely called for, inasmuch as the results of Ch. Bouchard's researches, as well as those of M. Charcot and Dr. Bastian, have already been laid before our readers in different forms. It is sufficient to say, that further investigations have only served to convince the author of the correctness of his opinion, that cerebral hemorrhage depends, in the great majority of instances, upon the rupture of miliary aneurism, and that these take their origin in a loss of elasticity of the minute arteries induced by peri-arteritis, or sclerosis of the arteries, in which connective tissue seems to be developed at the expense of the muscular coat. M. Charcot and himself have collected eighty-four cases of apoplexy, in all of which there were miliary aneurisms found. On the other hand, atheroma of the vessels is by no means a frequent condition in the bodies of those who have succumbed to cerebral hemorrhage, having been found only in about 22 per cent. of the cases examined. Heschl, moreover, has found that these aneurisms are rare before 40; but that after this age the rate of their development is a gradually increasing one; or, in other words, that their frequency according to age, bears a close relation to what we know of the frequency of cerebral hemorrhage at different periods of life. They are, moreover, rarely found except in brains which bear the evidences of old or recent extravasation of blood. They are not, as was at one time supposed, confined to the brain, M. Liouville having recently found them on the minute arteries of the œsophagus.

The translator, excepting that he has allowed a few unimportant typographical errors to escape his notice, has done his work well, and deserves the thanks of the profession for having placed this valuable work within its reach.

Four plates, one of them coloured, illustrating the aneurismal dilatations of the arteries, and a paper by the author and M. Charcot, which originally appeared in the "Archives de Physiologie," are appended in this volume to the original thesis.

J. H. H.

ART. XXIX.—*A Handbook of Post-mortem Examinations and of Morbid Anatomy.* By FRANCIS DELAFIELD, M.D., Curator to Bellevue Hospital, etc. 8vo. pp. 368. New York: Wm. Wood & Co., 1872.

WE are informed in the preface to this neat volume that it has been written as a guide for "those persons who may be called upon to perform post-mortem examinations. To most physicians this call is only an occasional one, so that they may feel the need of some handbook to which they may refer."

The book is divided into four parts. The first is devoted to the examination of the adult and newly born. The latter is an original subject to manuals of this kind, and makes a valuable addition thereto. The second part is the most voluminous, occupying the greater portion of the book, and is devoted to the morbid anatomy of the separate organs. The lesions of general disease, the effects of poisoning, and of violent death form the third part; while the fourth is devoted to an outline of the modern classification of tumours. The section upon the method of making post-mortem examinations has upon the whole failed to meet our expectations. The young practitioner, when required for the first time to dissect the visceral cavities, is brought face to face with a problem of which little or nothing has been said during his pupillage, and the dissecting room afforded him no opportunities of observation worthy of the name. The shrunken, altered tissues, with the arteries, it may be, filled with plaster, give a very inadequate idea of the parts when seen in a fresh condition. He learns no rules of operation, and would naturally expect to find in a handbook, such as the one before us, the guide he needs. He has a right to insist that an autopsy should be conducted with the same eye to method as on the living subject, and to find, in books handed him for the purpose, fixed and detailed directions for each manœuvre. A glance at our author's language shows that he has failed to do this satisfactorily. Thus, under his remarks upon the examination of the brain, he says:—

"The two halves of the cerebrum are to be gently separated until the superior surface of the corpus callosum is exposed. An incision is made through the junction of the corpus callosum and cerebrum cutting outward and downward into each lateral ventricle . . . The incision thus made through the roof of each ventricle is prolonged backward and forward in the direction of the cornua, until the entire cavity of each lateral ventricle is exposed. A long incision outward and downward is then made into each half of the cerebrum, from the outer edge of the lateral ventricle, nearly to the pia mater. A second incision is then made from this cut surface outward, and this is repeated until the cerebrum is divided into a number of long prismatic-shaped pieces held together by the pia mater. The velum interpositum is then dissected up, and the fourth ventricle opened. To complete the examination cross sections are made through all the large ganglia, the medulla, and the cerebellum. Care must be taken not to overlook small clots in the medulla oblongata."

This is defective we hold in omitting to mention that the brain when removed should be supported at the sides to prevent the outward strain lacerating the deep structures. The middle commissure of the third ventricle can in this way be easily torn, and in softened conditions of the brain other parts may suffer. It is also defective in not insisting upon the measurement of the fluid found in ventricles, and in the general directions of dividing the brain. For those given we would suggest something like the following: The incision into the lateral ventricle should be made not through the point of junction of corpus callosum with the cerebrum, but through the tissue of the cerebrum itself. Indeed, the best incision, though one requiring some skill to perform it, is a vertical one

made from the vertex of the brain about six lines to the outer side of the great longitudinal fissure. The lateral sinus being opened a syringe which is furnished with a long nozzle is used to withdraw the fluid, which should be carefully examined and measured. The lateral ventricle of the other side should be treated in the same manner. A long narrow knife is now passed through the foramen of Monro, and the corpus callosum and fornix at that point divided. These parts are now turned back to display the cavity of the third ventricle, which is thus unroofed, while the striated bodies and optic thalami are displayed along their entire lengths. The velum and the pineal gland are next examined, and the greatest care taken not to injure the latter body, which is frequently endangered by incautious handling of the velar tissue. A director is now passed from the third to the fourth ventricles—and the superincumbent parts divided. The hemispheres of the cerebrum may be next removed, saving the island of Reil from incision, which naturally belongs to the striated body of which it is a convolution. The examination is completed by making sections of the medulla, pons, optic thalami and striated bodies preferably in longitudinal rather than in transverse directions, since the former preserve relations, the latter destroy them.

Under the head of the thorax our author gives the following directions for opening the chest: "With a costatome or strong knife the costal cartilages are divided close to the ribs, the clavicles are disarticulated from the sternum, and the latter removed, taking care not to wound the large veins." This is about as definite as the following "rule" for amputation: Remove the affected limb at the point of selection and ligate the vessels; a correct rule enough but not a very useful one. Every one familiar with post-mortems knows that it requires a skilful hand to disarticulate the sternal end of the clavicle neatly. Attempts at its performance are chiefly responsible for the nicked and pointless knives of a hospital post-mortem case. The division of the first inter-costal cartilage by an oblique incision from below upwards and inwards is an aid to its easy performance, as it allows the knife to open the capsule at the lower edge of the sternal facet. Who has not seen the innominate veins opened by a bungling effort at severing this articulation and the subsequent smearing of the pleural cavities, disguising the appearances the observer is seeking, staining the serum or pus that may be present, and misleading him in his conclusion of the degree of venous stasis not only within the head but thorax and abdomen as well? Nor is it always necessary to effect the disarticulation. In young adults, and sometimes in older subjects, the sternum can be divided transversely about the line of the middle of the second costal cartilage.

We heartily commend the examination of the abdomen before removing the thoracic viscera, but are surprised that no directions are given to describe the organs of both cavities *in situ* before disturbing them. Indeed, in performing autopsies in private life it is well to avoid removing organs from the body as much as possible. With the exercise of a little care many of the viscera can be thoroughly examined, and portions removed for minute study, without taking the organs themselves from the body. We would feel inclined to supplement our author's remark that each lung is to be lifted up in turn, "the vessels, etc., at its base divided, and the organ removed" by saying—provided it be thought necessary to open the bronchi along their entire length, or when it is desired to preserve the lung as a specimen. But if the object be to examine the general appearance of the parenchyma of the lung as in pneumonia and phthisis, do not disturb the root of the lung, but, using it as a point of attachment, raise the lung from its bed, and by inserting a towel or sponge in the pleural cavity the

organ can be placed in a good light; held firmly in a convenient position for such measurements or incisions as may be thought necessary. Neither is it always requisite to remove the heart. The pericardium should be carefully opened, a syringe used to remove the serum, and the measurements taken, the clots removed, etc., without disturbing its position. Should, however, it be deemed necessary to learn the weight of the organ, or the condition of the valves, it must be removed. In making the incision to display the semilunar valves of the pulmonary artery (which are here oddly termed the "pulmonary valves"), we have no directions given us, but are informed that the incision may be made to pass through one of the points of juncture "with a little care." Now the "little care" simply consists in inserting the finger from the right ventricle up along the pulmonary artery until the anterior of the three corpora Arantii is felt by the finger; a pair of blunt-pointed scissors may now be passed upward along the fingers and the valve divided at the "point of junction" with certainty.

In the event of disease involving the entire respiratory tract, or when the lesion is one requiring careful dissection, as, for example, in thoracic aneurism, the better plan after the parts have been carefully studied in position is to remove them as far up as the hyoid bone, and eviscerate the thoracic cavity together with the trachea and larynx. This can be easily effected by making a vertical incision through the skin along the median line of neck (the sternum having been previously removed), and the soft parts roughly dissected to the side. A second incision is now made above the hyoid bone through to the vertebral column. The trachea is now seized with one hand and pulled downward toward the thorax, the knife being held in the other to divide the great vessels at the root of the neck. Below this there is no obstruction to the easy separation of the base of the lungs, the trachea, and œsophagus, and the evulsion of the entire contents of the thorax out over the abdomen, where it is now held only by the pericardial attachment to the diaphragm, the aorta, and œsophagus. In this position the relations can be satisfactorily studied, and the organs may be restored if it be required; or, if it be permitted, can be removed by severing the attachments above mentioned.

Other examples might be cited showing, as we think, that too much knowledge of method on the part of the operator has been taken for granted, and too little of the author's knowledge has been given in the method presented.

There is a capital résumé of the varieties and position of thrombi, on p. 305, and of thrombosis of the portal vein on p. 187, and of a curious case of thrombosis of the superior mesenteric vein from perforation of the vessel by a fish-bone, which had probably effected its escape from the stomach near the pyloric orifice. Another case of thrombosis of portal vein from a similar cause is detailed.

We would be doing injustice to this valuable addition to our literature to omit mention of the careful descriptions of the morbid condition of the viscera, as shown in the sections on ruptures and wounds of arteries, on peritonitis, and on the morbid conditions of the liver.

H. A.

ART. XXX.—*The Microscope and Microscopical Technology, a Text-book for Physicians and Students.* By Dr. HEINRICH FREY, Professor of Medicine in Zurich. Translated and edited by GEORGE R. CUTTER, M.D., from the fourth and last German edition. 8vo. pp. 658. New York: Wm. Wood & Co., 1872.

THIS work of Prof. Frey, long favourably known by all students of German medical literature, will doubtless, in its English dress, be welcomed by the pro-

fession as an acceptable addition to our standard works on the subject. In endeavouring to estimate its merits we must always keep in view that it is supplemented by other German works which discuss in greater detail points only superficially treated of or altogether untouched upon in the present work; thus, the well-known work of Harting is calculated to fill up the many gaps left in the consideration of the optical portion of the subject, while that of Dippel supplies us with a good account of vegetable histology, a subject not mentioned by our author. Indeed, in his preface he informs us that he looks upon his work as "concise" and "especially adapted to the practical wants of a medical man."

The work is divided into twenty-two sections, and of these the first four are devoted to a consideration of the optical principles involved in the construction of the instrument and of its accessories and of the methods of testing the latter. In treating of diaphragms the author gives the preference to cylindrical diaphragms over the rotary ones, which, on account of the convenience and rapidity with which one aperture may be substituted for another of different diameter, are almost exclusively employed in American and English instruments. He states, and we think justly, that it permits of finer gradations of illumination, but entirely omits to notice the effect produced by carrying it nearer to or removing it further from the object, according as we employ either convergent or divergent light. The relative advantages of central and oblique illumination and the subject of achromatic condensers are summarily dismissed in a few lines, without even a word on the principles of the construction of the latter, whether it is desirable that they should, as in most of our microscopes, be focussed on the object, or whether, as in the apparatus of Harting and others, their construction should admit of their being so used as to deliver parallel rays. We think that this must be a subject of regret to every thoughtful student, inasmuch as the successful use of the instrument is so dependent upon our knowledge of the principles involved in its construction, and we have all repeatedly seen how an accomplished microscopist can with a moderate power and suitable illumination demonstrate minute details in the structure of objects which the beginner can only satisfy himself of laboriously and by the use of much higher powers.

The account given of microscopic photography is also exceedingly insufficient; no allusion whatever being made to the most ordinary practical difficulties which stare every beginner in the face at the outset, as, for example, the fact that ordinary microscopic objectives are not achromatic (being either over or under corrected) and that consequently their actinic and visual foci do not coincide. Of course, therefore, the methods of overcoming this defect by monochromatic light, etc., are also passed over in silence. The author credits our countryman Riddell, with the production of the first binocular microscope, but evidently does not set a very high estimate on the practical utility of these instruments, and at page 51 says: "Opinions are divided with regard to the utility of these instruments; they have certainly been overestimated by many. We must leave it to the future to decide whether science is to derive any benefit from them." On the other hand, he maintains that the use of polarized light in the examination of tissues has a high scientific value in bringing out molecular relations which in ordinary light entirely escape notice, although, as he kindly informs us, the interpretation of the phenomena is often difficult, and the ignorance of medical men in the domain of optics great. The chapters treating of preservative fluids, chemical reagents, staining tissues, metallic impregnation, injections, etc., are exceedingly satisfactory and to the point. We can only regret that he has not discussed more in detail the staining with hæmatoxylin and the hardening of tissues by freezing. His remarks on the so-called

"indifferent media," showing the destructive effect of water on tissue, and that all substances which have really any claim to be so considered must contain both crystalline and colloid substances, are admirable.

In giving directions for imbedding objects preparatory to making sections of them, he gives four methods, viz.: 1, in gum; 2, in wax and oil; 3, in paraffine, and, 4, in glycerine and gelatine. He, however, simply melts his paraffine, and makes no mention of the advantages derived by thinning it with either benzine or paraffine oil, and thus rendering it less hard and brittle. In mounting objects our author recommends highly Canada balsam, and thinks both gum damar and mastic "superfluous," "only to be used here and there by way of experiment."

In the chapter on "Epithelium, Hair, and Nails," we have a good wood-cut of the so-called "stachel" or "riff" cells, that is, cells in the lower and consequently younger and softer layer of epithelium, which are ridged or toothed at their margins and fit into one another as one cogwheel into another. Strange to say, however, there is no hint of the possibility of their being artificial productions caused by the action of the menstrua used in examining them.

In speaking of connective tissue Prof. Frey mentions "that Ranvier has made us acquainted with a useful method of examining tendinous tissues," and instances his investigations of the thin fibres obtained by tearing the caudal vertebræ of young rats from their tendinous attachments, but expresses no opinion on, and indeed gives no account of, the views which he has advanced concerning the structure of tendon and the cells of connective tissue. The chapter on muscles and nerves is one of the most interesting and complete in the book. There is no department of histological investigation which has of late years been more assiduously cultivated by able observers than that treating of the minute structure of nerves and muscles, and certainly there are few points more difficult of demonstration than the final ending of nerve fibres in muscle (both striated and unstriated). The *résumé* which is given of the present state of our knowledge on the subject, and the wood-cuts illustrating it, will therefore not fail to attract the attention of the reader. The defects of the chapter are those inseparable from the general plan of the work, and shared therefore perhaps in a higher degree by all others treating of the structure of tissue. Touching as they necessarily do at almost every page on the most intricate and extended inquiries in the domain of histology, pathology, and organic chemistry, the reader has unavoidably at times a sense of dissatisfaction from the bare allusion or the summary curtailment and dismissal which the author is obliged to resort to in order to keep within the limits which he has mapped out for himself in his work.

The extended field occupied by the remainder of the work, *e. g.*, vessels and glands, the digestive, urinary, respiratory, and sexual organs, the organs of special sense, offers an almost inexhaustible opportunity for criticism and comment. We believe, however, that enough has already been said to show the value and scope of the work; although we have pointed out what we consider defects in it, we are nevertheless convinced that every microscopist will find it a pleasant and instructive addition to his library, and would cordially recommend it to every one interested in the study of minute anatomy.

Dr. Cutter as translator has done his work very creditably, and the book will compare well in this respect with many of the translations with which the medical public have recently been favoured. Where he errs it is on account of a too literal rendering of the text, thus, *e. g.*, at page 40 we find, speaking of drawing microscopic objects, "It should not be forgotten to lay in the shadows symmetrically on the right side, as it is only thus that elevations and depressions can be

brought forward in the picture." We venture to say that nine readers out of ten not having the original before them, would suppose that Prof. Frey intended the shadows in all drawings to be placed on the *right-hand* side; whereas he simply directs that the shadows should be laid in carefully in their proper place so as to render faithfully the elevations and depressions of the image (picture). Again, at p. 251 we find mention of a "Pravaz syringe," and think few readers would recognize in it the equivalent of what is familiar to every medical reader as a syringe for subcutaneous injection; moreover, Dr. Cutter insists throughout the book on calling magnifying glasses and simple microscopes "loups."

Some of the additions made by the translator will be most acceptable to the American reader; e.g., pp. 81-86, "A History of the Microscope as an American Instrument;" pp. 112-117, a description of Dr. Edward Curtis's section cutter and his method of imbedding and cutting tissue, which is one of the most satisfactory with which we are acquainted.

In conclusion, we find at the end of the book a price list of many of the most prominent microscope makers, but are rather surprised that in the list of English makers, while Pillischer and Baker are mentioned, not a word is said in regard to either Powell and Lealand, or R. & J. Beck. W. F. N.

ART. XXXI.—*A Manual of Histology*. By Prof. S. STRICKER, of Vienna, Austria, in co-operation with TH. MEYNERT, F. VON RECKLINGHAUSEN, MAX SCHULTZE, W. WALDEYER, and others. Translated by HENRY POWER, of London; JAMES J. PUTNAM, and J. ORNE GREEN, of Boston; HENRY C. ENO, THOS. E. SATTERTHWAITE, EDW. C. SEGUIN, LUCIUS D. BULKLEY, EDW. L. KEYES, and FRANCIS E. DELAFIELD, of New York. American Translation edited by ALBERT H. BUCK, Ass't Aural Surgeon to the New York Eye and Ear Infirmary. With 431 Illustrations. 8vo. pp. 1106. New York: Wm. Wood & Co., 1872.

THE enterprising New York publishers of this valuable work have issued in a single volume the entire treatise edited by Stricker. This edition contains, translated by Americans, not only the special senses, which are the subjects of Vol. III. of the New Sydenham Society's edition, but also the matter of Vol. II. of Mr. Power's translation.

Having already noticed the contents of Vols. I. and II. of the New Sydenham Society's edition, we will confine ourselves to the remaining subjects.

Chap. XXXIV., on the *Organ of Taste*, is by TH. W. ENGELMANN, of Utrecht, and is translated by A. H. BUCK. Most interesting and important is the description of the *taste-buds* (Geschmacksknospen), *taste-bulbs* (Geschmackszwiebeln), or *taste-beakers* (Schmeckbecher), as they are variously called. These are described as occupying cavities in the epithelium of the mucous membrane of the tongue, fitting them perfectly at every point. They are found more particularly in most sensitive (as to taste) parts, as the upper surface of the root (especially the circumvallate papillæ), the edges and tips of the tongue, and probably the anterior portion of the soft palate.

Chap. XXXV., *The Organ of Smell*, by Prof. BABUCHIN, is translated by FRANCIS E. DELAFIELD. We were much confused and delayed in our understanding of the first part of this chapter by an evident transposition of the text descriptive of fig. 304 to fig. 303, and of that of 303 to 304. If this transposition occurred

in the original, which we have not now at hand, it should not have escaped the observation of the translator, while if the error is peculiar to the translation it is even less excusable.

The organ of smell, as may be said of all the organs of special sense, is composed of three component parts—(a) the apparatus which appreciates odours; (b) the conducting apparatus, and (c) the central organ to which the sensations of smell are transmitted by the conducting apparatus. So, also, the first part, the apparatus which appreciates odours, as that of which the minute structure is most complex and most recently appreciated, is the most interesting. This, as well as a part of the second, is imbedded in the mucous membrane, known as the “*regio olfactoria*,” which, in the higher animals, covers the upper and deeper portions of the nasal cavity.

Max Schultze is accredited with having laid the foundation of a correct knowledge of the histology of this region. This is covered in the lower animals (frog) with a thick layer of the so-called “Bowman’s glands”—follicular glands, having constricted orifices and lined by round or polygonal cells. These, according to Kölliker, are replaced in man by the ordinary mucus-glands, but, according to Schultze, those in man represent transition forms suggesting Meibomian glands. Schultze has also found racemose mucus-glands in the human olfactory region. Imbedded in the connective tissue between these glands are bloodvessels and branches of the olfactory nerves.

Thus far, the structure of this region is well determined, but beyond this, there would appear to be as much uncertainty in the actual knowledge as there is obscurity in the language used by the author to describe it.

Chap. XXXVI., *The Organ of Vision*, by MAX SCHULTZE and others, is a masterpiece. It is translated by HENRY C. ENO. Schultze makes ten layers of the retina, which, passing from within outwards, he names as follows: 1. *Membrana limitans interna*; 2. Layer of optic nerve fibres; 3. Layer of ganglion cells; 4. Internal molecular layer; 5. Layer of internal granules; 6. External molecular (intergranular) layer; 7. Layer of external granules, including the external fibrous layer which exists in certain portions of the retina; 8. *Membrana limitans externa*; 9. Layer of rods and cones; 10. Pigment layer.

The *Bloodvessels of the Eye* are treated by TH. LEBER, the *Lymphatics* by G. SCHWALBE. Consistently with recent advances in our knowledge of the lymphatic system, the eye has been found to furnish abundant channels and spaces for the conveyance of the lymph derived from its various tissues, some of which are highly vascular. Prof. A. IWANOFF treats of the *vitreous body*, the understanding of which is seriously interfered with by the absence of all illustrations, a deficiency which is by no means confined to this portion of the volume. According to the author there is no distinct capsule for the vitreous, no “*membrana hyaloidea*,” so-called, though in front the tissue of the vitreous is condensed to form a limiting layer, the posterior wall of the canal of Petit.

The structure of the *Lens* is successfully displayed by Prof. BABUCHIN, whose paper is well illustrated. So also is that of ALEXANDER ROLLETT, on the *Cornea*, which furnishes a complete account of this important tissue. The histology of the cornea should be familiar to every medical man whatever the subject of his special interest, since it has been made the seat of almost all important observations on the nature of inflammation.

The following layers of this structure are made by the author:—

1. The external epithelium of the cornea, a flat laminated epithelium.
2. The true corneal tissue.
3. The membrane of Descemet, a sharply defined homogeneous appearing membrane.

4. The endothelium of the membrane of Descemet, a single layer of flattened cells.

The *Conjunctiva and Sclerotica* are by STIEDA, STRICKER, and KLEIN. The manuscript of the first named is lengthened by Stricker, and the subject is admirably illustrated with drawings by Klein.

The *Lachrymal gland* is treated by FRANZ BOLL. Agreeing in all essential points of structure with the salivary glands, it requires no extended note from us. J. T.

Chap. XXXVII. is on *The Organ of Hearing*.

I. *The external and middle ear exclusive of the Eustachian Tube*, by J. KESSEL. The author in a few introductory remarks divides, according to the almost universal opinion held at present, the entire organ of hearing of the higher vertebrates into a sound-conducting and a sound-perceiving apparatus, classing under the percipient elements the entire inner ear, *i. e.* in the vestibule, the semicircular canals, and the cochlea. Whether such a division can be much longer maintained, we will not stop to inquire.

Nothing new is added concerning the auricle and external meatus. The distribution of the vessels in the fibro-cartilages should have received more careful study.

The theme of the *membrana tympani*, however, has been thoroughly elaborated and constitutes the bulk and most valuable part of Kessel's paper.

Most readers will find new to them the description of the *peculiar bodies* resembling a Vater's corpuscle with their concentrically arranged capsules, which exist more or less numerous in the submucous connective tissue of the tympanum and mastoid cells. An axis band runs through the centre of these lemon-shaped bodies, which immediately after its exit spreads out fan-shaped into the adjacent tissues. Kessel was the first to describe these bodies as existing in the normal healthy ear, but their precise physiological function still remains to be determined. Having had the opportunity of verifying the author's preparations, we take pleasure in testifying to the accuracy of his description and delineation of these bodies.

In the description of the ossicles and their muscles, we miss all the more an accurate account of the several articulations and the relations of the muscles to the ossicles, since these points have acquired great interest through recent investigation. A more detailed account of the relations of the mastoid cells in the various stages of development of the petrous bone might have been safely given, since a precise knowledge of them would be of great importance to pathological studies.

II. *The Eustachian Tube*. III. *The Membranous Labyrinth*, by Prof. RÜDINGER. His earlier publications and labours in this direction have eminently qualified the author for the performance of the task assigned to him. It is rendered one of the most attractive chapters of the entire volume by the perspicuity of the language employed and by the exceptional liberality with which Stricker has allowed it to be illustrated.

Throughout this chapter the reader will find many new and valuable contributions to the comparative microscopic anatomy.

IV. *Auditory Nerve and Cochlea*, by W. WALDEYER. Any reader desirous of studying the complicated structure of the organ of Corti with the ultimate terminations of the auditory nerve, will nowhere find a more reliable and complete treatise than this of Waldeyer.

The several papers upon the organ of hearing have been conjointly translated by J. ORNE GREEN, T. E. SATTERTHWAITE, and ALBERT H. BUCK. It is appa-

rent, from the excellent manner in which they have performed their work, that they have entered into it *con amore*.

R. M. B.

ART. XXXII.—*A Treatise on the Principles and Practice of Medicine; designed for the use of Practitioners and Students of Medicine.* By AUSTIN FLINT, M.D., Prof. of the Principles and Practice of Med., and of Clin. Med. in the Bellevue Hosp. Med. Coll. Fourth edition, carefully revised. 8vo. pp. 1070. Philadelphia: Henry C. Lea, 1873.

It is unnecessary for us to do much more in reference to the present edition of this work than to call attention to its issue, and to state that some portions of it have been rewritten, and numerous additions made throughout the volume, amounting in all to about seventy pages. These alterations are pretty well distributed, but the most important of them are included in the chapters relating to general pathology, to nervous and renal diseases, and to fevers. In the first of these are discussed the important subjects of tubercle, embolism, and thrombosis, and septicæmia. In the second we find an account of aphasia, pachymeningitis, spinal meningitis, cerebritis, and myelitis; in the third, of hydronephrosis and abscess of the kidney; and in the last much new matter appears under the heads of relapsing fever, vaccine, and rheumatism.

In all these additions, as in the original text, the author has known how to combine fulness of detail with conciseness of style, to distinguish between fact and probability, and to avoid that positive and dogmatic tone which is most strongly developed in the writings of those who have least claim to employ it. The higher one rises towards absolute truth, the more remote does it appear; and the less is one disposed to criticise the ignorance and self-assertion of those whose life is on a lower level. Our author has so much of his own to communicate that he concerns himself but little with a criticism of views from which he dissents or of opinions that he condemns. The reader who seeks for a plain, clear, succinct, yet full account of diseases and their treatment, cannot do better than study this volume, which probably contains a greater amount of truth, and is disfigured with fewer errors, than any treatise of its kind.

As in former editions, so in this, the articles are of unequal merit; and yet we think that the inequality is less conspicuous than before, a fact, if it be one, which speaks for the author's more enlarged and more critical and personal study of the subjects of which he has treated. If we were to characterize his genius we should call it clinical in opposition to critical; and while feeling implicit confidence in his own observations and his conclusions from them, we cannot hold his judgment of the facts and doctrines of others in equal esteem. To expect a medical author who is also immersed in the details of an onerous practice to be equally distinguished in both fields is, perhaps, to look for the impossible.

One article, that on relapsing fever, may be taken to illustrate this estimate, for although the author had some opportunity of studying the disease, we cannot regard his account of it as satisfactory. It does not indicate an acquaintance with the literature of the subject, which would have prevented several errors of statement, such as, that "relapsing and typhus fever are apt to prevail together;" that "there are no distinctive morbid appearances found in the rare cases that prove fatal;" that "it is not a highly contagious disease;" that "destitution, deprivations, and especially deficient alimentation,

are powerful predisposing causes," if this means especially predisposing to relapsing fever; that "the comparatively much greater fatality of typhus and typhoid fever is due mainly to complications," etc. So, in the article on cerebro-spinal meningitis, we observe it stated that a certain opinion was held by the author "under the belief" that the epidemic disease of 1807 and 1816 was identical with epidemic meningitis. This is no more a matter of "belief" than that the smallpox of Rhazes is the smallpox which Dr. Flint so well describes. We cannot avoid calling attention to the implied approbation which our author gives to the use of digitalis, aconite, and veratrum viride in inflammation and even in typhoid fever. We say "implied" approbation, because he does not produce any evidence to recommend it, drawn from his own experience. And we are fain to inquire how approbation expressed or implied, qualified or absolute, can be given to such a plan by an author who also declares, and most truly, that "the importance of support is based on the plain fact that, typhus and typhoid fever being self-limited diseases, if the patient can be kept alive, after three, four, or more weeks, recovery must take place, provided there be no serious complication." (p. 903.) And we should also be glad to learn how the "restorative system," which in one shape or another is that of Dr. Flint as well as of other practical men, can be carried out in patients drugged to the very verge of death with aconite, veratrum, or digitalis.

We have felt bound to point out these things which appear to us blemishes in a work of great merit, and the more so because they are, comparatively, surface stains which do not seriously impair its value, nor detract from the high esteem in which we hold its solid and compact knowledge, and the sober judgment and fruitful labours of its distinguished author.

A. S.

ART. XXXIII.—*The Diseases of the Stomach. Being the Third Edition of the Diagnosis and Treatment of the Varieties of Dyspepsia.* Revised and Enlarged. By WILSON FOX, M.D., Physician to University Coll. Hosp., etc. 8vo. pp. xii., 236. London and New York: MacMillan and Co., 1872.

IN preparing the third edition of his work on *the Diagnosis and Treatment of the Varieties of Dyspepsia*, the author has enlarged it by the addition of several of his contributions on analogous subjects to Reynold's *System of Medicine*. The most important of these are the articles on *Ulcer and Cancer of the Stomach*. The book has therefore additional claims to be considered a complete treatise on diseases of the stomach. It is nevertheless still imperfect in some respects. A few remarks on the physiology of the stomach would not have been out of place in a work of this character, and, we think, our author would have done well to have followed Dr. Fenwick's example in giving them a prominent position. The latter has, moreover, pointed out more clearly than the former the changes which the digestive organs undergo in general diseases, and has also very distinctly shown that in certain cases of Bright's disease there is marked disease of the glands of the stomach. Dr. Fox, it is true, alludes to this, but not in a way to arrest the reader's attention. There is every reason to believe that, in many instances, the alterations in the coats of the stomach occur *pari passu* with those in the kidney, and that they are only parts of a constitutional derangement which may require very different treatment from that which would be appropriate in a local disorder.

The author devotes a large part of his book, fifty-six pages in all, to some

general remarks on the symptomatology of the stomach, and these, as well as the chapters on the various forms of dyspepsia which follow, our readers will, we are sure, find of value. Dr. Fox has certainly done much towards removing the difficulties which surround the diagnosis of the causes of dyspepsia, and has succeeded in defining clearly the conditions of the stomach in which the indigestion of food arises. His treatment is, moreover, judicious, and the practitioner who has exhausted the usual remedies, may refer to this book with the certainty of obtaining a useful hint. The chapters on ulcer and cancer of the stomach, although not equal to those we have just been considering, are carefully written and contain very full reference to the observations of others on these subjects down to the present day. And the student of these and other diseases of the stomach will find his labours very much lightened by consulting the footnotes which are freely scattered throughout the volume.

The book is remarkably free from typographical errors, but there is one which the author has allowed to escape his notice. On page 10 he speaks of tympanitis instead of tympanites.

The changes in the gastric tubes in cases of acute and chronic catarrh are well shown in two plates which accompany the volume.

J. H. H.

ART. XXXIV.—*Hand-book of Medical Electricity*. By HERBERT TIBBITS, M.D., L.R.C.P. Lond., Medical Superintendent of the National Hospital for the Paralyzed and Epileptic, Medical Officer for Electrical Treatment to the Hospital for Sick Children, Great Ormond Street. With sixty-four illustrations. Small 8vo. pp. 164. Philadelphia: Lindsay & Blakiston, 1873.

VERY often there are a few central paragraphs in a book which give prompt insight as to the aims with which it is written and about which the bulk of the work is clustered. The following are illustrations in the volume under consideration:—

“The almost complete absence in the medical schools of the great hospitals, of opportunities for an adequate study of electro-therapeutics, the importance of the subject, and the widespread attention that it is awakening throughout the profession, have determined me to sketch, as briefly as is consistent with clearness, the present position of the science and practice of medical electricity, and especially of its practice.”

Also:—

“There is too much belief and too much unbelief in the therapeutic power of electricity. The men who estimate it fairly are quite the minority. It is generally either much undervalued, or else believed to be a sort of modern elixir vitæ, capable of curing a hopeless hemiplegia from destruction of brain tissue, or a paralysis agitans from senile degeneration. Although it will do neither of these impossibilities, yet, considered as a remedy, it is of great value in a wide margin of diseases.”

The aim of the author, in affording a handbook for general practitioners, has been satisfactorily attained, and his views concerning the general estimate placed on electricity as a remedial agent are, we think, very just. In addition to particular directions for the use of electricity in certain diseases, the work contains an interesting description of Dr. Radcliffe's special method of electrization, the merits of which method may be regarded as still under trial.

To our own medical men the work would be more serviceable if it contained

a description of the best electrical instruments of domestic manufacture, but without this, it is yet worthy of a place in the library of every American physician.

F. A. B.

ART. XXXV.—*Smithsonian Contributions to Knowledge*, 241. *A Contribution to the History of the Fresh-water Algæ of North America*. By HORATIO C. WOOD, JR., M.D., Professor of Botany and Clinical Lecturer on Diseases of the Nervous System in the University of Pennsylvania. 4to. pp. viii., 262, 21 coloured plates. Washington, 1873.

THE young physician who has a microscope and a wish to use it (leisure may be taken for granted), will find that this book will enable him to commence the study of the algæ with good prospect of success; and if he will consider the information to be derived from Dr. Wood's work as merely the alphabet of the matter; that is as giving the characteristic modes of growth and reproduction of the several genera, and enabling the student to identify the forms which he will commonly meet; and will then carefully work out some of the numerous problems presented in the development of a few species, "looking beyond his microscope," he will find that his time has been well spent.

In the algæ may be studied cell growth and multiplication in their simplest forms; and the phenomena of life may be watched without the need of complicated apparatus and tedious dissections. There is no more certain method of increasing the height of the pyramid of medical science than by extending its base; and no field promises more to the physiologist and the physician than that of cryptogamic botany. Thus far it has for the most part happened that those who have called attention to the possible connection between these lower organisms and the science of medicine, have not allowed the want of material to prevent their building, and the result has been the reverse of stability.

Before deciding that certain small green cells are the causes of disease, it may be well to learn something about them; whether they may be young moss cells or gonidia of a collema; botrydium, chroococcus, or a palmella, all of which have within our own knowledge been taken for the ague plant, and any of which will in certain stages correspond sufficiently to the original description of that famous organism.

Dr. Wood's work furnishes to American microscopists the necessary foundation for further investigations, and it is greatly to be regretted that no similar work exists for the minute fungi.

The plates are well drawn and coloured, and are of more value than many pages of description, as means of identification of forms. The magnifying power is given for each figure; but it would have been more convenient had the three or four scales used been placed on each plate. The work is commended to all practical microscopists as a valuable book of reference. J. S. B.

ART. XXXVI.—*Lessons in Elementary Anatomy*. By ST. GEORGE MIVART, F.R.S. Lecturer on Comp. Anat. at St. Mary's Hospital, etc. 12mo. pp. xxvi., 535. London: MacMillan & Co., 1873.

THE design of this book is to present anatomy in a shape which will enable the medical student and the general reader to gain an insight into the structure

of animals. It is in fact a handbook of comparative anatomy. The author divides the work into lessons, as follows: The general review of the subject; the skeleton in general; the skeleton of the head; the upper limb; the lower limb; the internal skeleton; the external skeleton, including the teeth, feathers, etc.; the muscles; the nerves and organs of sense; the organs of circulation; the alimentary organs; and the excretory organs; thus making twelve lessons. They are of varying length, and the amount of space devoted to the skeleton is fully one-half of the entire volume. This predominance has been deliberately assigned, we are informed, for the following reasons: (1) The general resemblance borne by the skeleton to the external form; (2) The close connection between the arrangement of the skeleton and of the nervous system, muscles, and vessels; (3) The relations borne by the skeleton of each animal to the actions it performs, *i. e.*, to the mode of life, and habits of the various animals; (4) The obvious utility of the skeleton in classification, and interpretation of affinity; (5) Parts of skeletons, or casts of such, are all we possess of a vast number of animals formerly existing in the world but now entirely extinct.

The language of the author is generally clear and aided by copious illustrations—there being 410 wood-cuts, most of them originals, interpolated through the text.

Of the author's claim to consideration there can be no doubt. He is known as an original investigator of the higher groups of Vertebrates, and the proposer of an ingenious modification of the accepted theory of the vertebrate skeleton. But with all due deference to his authority we cannot but believe that the amount of space occupied by the osseous system is too large, and his method of presentation of many of his facts, both here and elsewhere, is not the best. Thus the consideration of the teeth, among the parts of an external skeleton, we hold to be faulty. The homological relations they may have to the proper dermal outgrowths do not compensate in our opinion for the enormous disadvantage the student labours under in studying the dental system apart from the alimentary canal—all its physiological relations are with the latter. Mr. Mivart would apparently have us enumerate the teeth among the bones of the human skeleton. Indeed there is too little attention given to the relation of structure to function throughout the book. We read among the remarks on the digestive organs that "the stomach (in animals) may be very much shorter than in man; and indeed, its depth may exceed its length, as is the case in the *Ornithorhynchus*, and some Insectivora, *e.g.*, *Rhynchocyon*. It may be also globular, as in the fish *Mormyrus*." Nothing unites these remote and very dissimilar forms but the short longitudinal diameter of the stomach, which is surely an unimportant fact. There is scarcely an intimation, anywhere in the lesson on the alimentary system, of the correlation between the structure of the digestive tract and the kinds of food consumed.

In the section on the Circulation, the absence of comment, on the relations between the conformation of the heart and the character of the circulation, is particularly noticeable. We may premise that the chief object of a demonstration of the cardiac series is to indicate that the differences between the kinds of bloods have something to do with the hearts themselves. The structure of the heart of the fish indicates a venous character of the cardiac blood, that of the batrachian and reptile for the most part a mixed character, that of the bird and mammal a complete separation of two currents, a venous and an arterial. Certain structures of the heart of air-breathing types, such as the *ductus arteriosus* and the *foramen ovale*, are of primary importance in such a demonstration; and in our judgment no "elements" of instruction can properly omit some mention of them. Yet in our author's description of the human heart

and great vessels nothing is said of the *ductus arteriosus*; nor is the foetal circulation in man described with a view of aiding the student in comprehending the heart having a mixed blood.

We may take exception to the assertion that the dental arch is interrupted in all living mammals below man excepting the lemur *Tarsius*; some of the bats having the same peculiarity. Nor can we accept the use of the word "beast" to small mammals—as when he speaks of apes and "other beasts as the hedge-hog." He appears to apply the term to all the mammals—seeking, perhaps, in the vernacular for a word expressing a milk-yielding quadruped. We believe that most readers would prefer its application to those animals used by man for "food, labour, or support." The use of the term "Ape" is also here seen in a decidedly exceptional way—for, instead of restricting it to the old world forms, it is given to the new world as well.

The attempt to write for two distinct classes of readers may explain some of these features of the volume. It is not for us to reflect upon the accuracy of the author's judgment other than to remark that an omission of the anatomy of the organs of generation, while fitting the volume for the academy, materially impairs its usefulness to the medical man. But so far as it goes the latter will find in it a mass of information relative to the structure of animals not to be found in any other volume, and presented in a pleasing form.

H. A.

ART. XXXVII.—*Surgical Diseases of Infants and Children*. By M. P. GUERSANT, Hon. Surgeon of the Hôpital des Enfants Malades, Paris. Translated from the French by RICHARD J. DUNGLISON, M.D. 8vo. pp. 354. Philadelphia: Henry C. Lea, 1873.

THIS work is familiar to many readers of the Journal, having been published in the *Medical News and Library*, so that, as its character is pretty fully known, we shall call attention to only a few of the points which have struck us upon a reperusal of it.

M. Guersant disclaims any intention of writing a comprehensive treatise upon infantile surgery, his sole object having been to embrace within the pages of his book those affections incident to childhood, which he has met with sufficiently often to have made them the subject of special study, and to pronounce opinions based upon the results of his own observation. That these opinions are worthy of careful consideration will be evident when we remember that for twenty years their author enjoyed the advantage of the practice of the Hôpital des Enfants Malades; yet, whoever disregards the great mass of the current literature upon the subject of which he treats will assuredly do as M. Guersant has done, write a book in many points behind the age in which he lives.

He advises, except in those cases of imperforate natural openings which brook no delay, to postpone operating upon children until they are at least two or three weeks old; by so doing, he thinks, more satisfactory results will be reached than where an operation is done immediately after birth. By waiting a short time an opportunity is given to vaccinate the child, and individual peculiarities may be learned, while we shall be spared the mortification of seeing the operation marred by an unexpected outbreak of inherited syphilis or an attack of variola.

The subject of fractures occupies fifteen pages, being discussed in an exceedingly general manner; indeed, we think too little space is devoted to it, while the style is vague and indefinite. For instance, separation of the coronoid process of the ulna is spoken of as if it occurred with about the same frequency as any other fracture in the neighbourhood of the elbow, whereas its existence is doubted by some, and its extreme rarity admitted by all. We ourselves think that we once saw a case, and our judgment was backed by good authority, but we have never seen a second. One case of ununited fracture is narrated, which occurred in the case of a little girl, whose age is not given, in which, after a full trial of the most highly vaunted methods to procure consolidation, amputation was resorted to at the expiration of some years. M. Guersant recommends an early application of apparatus after fracture, but he has not heard of extension by a weight in fractures of the thigh-bone. The immovable dressings, so much in vogue of late, receive no commendation, and the general line of practice is somewhat antiquated. In cases requiring amputation a primary operation is earnestly advocated.

M. Guersant has performed lithotomy one hundred times. He adopts the bi-lateral method, and advises that, when it is necessary, the wound should be plugged with agaric and a flexible catheter rather than with Dupuytren's canula. Although our author speaks with pride of the virile powers of some of his old stone cases as evidence that the spermatic ducts were not involved in his incisions, he refers to three cases in which the rectum was wounded. The exceptionally high mortality .14 is accounted for when we learn that he lost eight cases from croup. Forty cases of lithotrity are referred to, of which four succumbed to intercurrent affections, and three died from the operation, showing what is now pretty fully established, that this proceeding has its best field among adults.

In simple hare-lip M. G. states, that we may operate in the first month, but in complicated cases, or where the bones are deficient, we are advised to delay much longer. The view taken of Littre's or Amussat's operation for imperforate anus is a discouraging one, as, in our author's opinion, the disgusting deformity which follows a successful operation is but little better than death. We are struck by the honesty with which M. Guersant tells of the mistakes he has made, mentioning a case where he excised an ovary which made its appearance in the left labium, having mistaken it for a cyst—while further on he tells us that he ligatured, with fatal result, an encephalocele which protruded through the temporo-ethmoidal suture, it having been mistaken by his colleagues and himself for an erectile tumour. We regret to find all operations upon exstrophied bladder condemned as useless, thus ignoring the labours of Mr. Wood and others. For the removal of subcutaneous tumours in general, the use of Vienna paste, or some other form of caustic, is advised, as less likely to be followed by erysipelas than when excision is resorted to.

One of the most striking peculiarities this book presents is its resemblance to a mosaic, there being no attempt to follow any method of classification. To one who has Holmes to refer to for special directions, the volume is valuable as containing the views of its distinguished author and of the French school, but it is less suitable as a vade mecum for students.

We always enjoy books such as this, which are given to the profession as the result of a life's labour and observation, but there is a melancholy interest attached to this volume in particular from the fact that its distinguished author is one of that army of martyrs whose lives have been sacrificed in the discharge of duty—M. Guersant having recently died of syphilitic disease, received by inoculation from a patient.

S. A.

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *The Structure and Regeneration of Nerves.*—Our knowledge of the minute structure of nerves has been considerably advanced by the recent elaborate researches of RANVIER, who has shown that the description of nerves hitherto given and accepted must now be modified in many particulars. Ranvier undertook three series of investigations—the first two upon the normal histology of the nerve-tubes and their sheaths; and the third, in application of the discoveries he had already made, upon the changes which the nerves undergo after section. The results obtained will be given in the same order. The subject of Ranvier's first investigation (*Archiv. de Phys. Norm. et Path.*, March, 1872) was the structure of the nerve-tubes, nerve-fibres, or primitive nerves, as they are variously named. An ordinary medullated peripheral nerve-fibre is composed, as is well known, of a protoplasmic axis cylinder, an insulating "white substance" or medullary sheath, in which the former is imbedded, and a nucleated membrane called the sheath of Schwann, which incloses the whole, and gives the nerve the strength and resistance for which it is remarkable. We have hitherto believed that the nerve-tube is uniform in its entire length—no transverse section of it being different from another. The first important discovery made by Ranvier was that this description must be considerably modified; that a medullated nerve is not an uniform elongated structure, but that there occur upon it, at regular intervals, peculiar annular constrictions, due in part to a complete absence at these situations of the medullary sheath. This remarkable condition Ranvier was first enabled to appreciate by using some of the rarer histological reagents in preparing the specimens, such as picro-carminate of ammonia, perosmic acid, and nitrate of silver; but once the constrictions have been discovered and described, they may now be recognized without difficulty even in fresh nerves. A medullated nerve-fibre must now be described as built up of segments exactly similar in every respect, arranged end to end, and separated (or united) by annular constrictions where their extremities come into contact with each other. Each segment of the nerve is composed of the three elements just enumerated—the axis cylinder, medullary sheath, and sheath of Schwann—but here also Ranvier's description differs in some important respects from what was previously given. The Schwannian sheath of each segment is furnished with a single nucleus only, and this nucleus lies exactly in the middle—that is, at an equal distance from the two ends—of the segment, and belongs rather to a delicate layer of protoplasm lining the interior of the Schwannian sheath than to the Schwannian sheath itself. The annular constrictions which the nerve presents, or, as it may be otherwise ex-

pressed, the planes by which the segments are united end to end, present the appearance of clear, highly-refracting biconcave disks, seen in profile, and placed across the long axis of the nerve. On careful examination each disk is found to be divided into two symmetrical halves by a transverse line of extreme fineness; either half of the disk belongs to the corresponding nerve-segment, and may be traced uninterruptedly into its Schwannian sheath and the protoplasm by which the same is lined. The septa thus formed between the individual segments are so far complete that, as has been already mentioned, they entirely separate the medullary sheath of neighbouring segments from each other, and make the medullary sheath of a nerve-tube, not a continuous but a regularly interrupted covering. The axis cylinders of the segment, on the other hand, are all perfectly continuous; they pass uninterruptedly through a nearly central opening in the inter-segmental disk, and thus there is a single unbroken conducting axis of nervous matter in each tube. The length of each segment while constant in a given nerve is decidedly less in a young than in an adult animal—that is, in a growing nerve than in a fully formed one; and Ranvier makes the important observation that newly developed portions of nerves might thus be recognized in a healing wound.

The function of the annular constrictions in nerves is very evident. The fatty material of which the medullary sheath is composed is not permeable by the nutritive fluids; and it is only through these interruptions in the medullary sheath that the axis cylinder can possibly be nourished.

Ranvier next investigated the histology of the connective tissue around the nerves (*ibid.*, July, 1872). The most interesting points which he made out related to the structure of the sheaths immediately surrounding the primary bundles of nerve-fibres. These primary sheaths are composed of concentric lamellæ of a homogeneous elastic substance, in which bundles of connective tissue are disposed, the whole forming a covering of remarkable strength for the bundle of nerves which is inclosed. This explains the great resistance to suppuration and ulceration which nerves have always been known to possess. However, there is a limit even to this resistance. If the sciatic nerve of a living rabbit is laid bare, and water allowed to fall upon it drop by drop, paralysis of the corresponding muscles will follow in fifteen to eighteen minutes; and if an examination of the nerve be made at once, a remarkable alteration will be found to have taken place upon the fibres within the sheath, for the annular constrictions have disappeared and the whole nerve is swollen, especially the axis cylinder. In forty-eight hours the fibres have completely degenerated. From this observation Ranvier draws the practical conclusion that irrigation of a wound in which nerves are exposed may not be so harmless as is generally supposed.

In his third and last research, Ranvier made a practical application of the knowledge which he had acquired to the investigation of the changes undergone by a nerve after section (*Comptes-Rendus*, December 30, 1872, No. 27). The changes upon the central and peripheral ends of the cut nerve are remarkably different. While the central extremity presents merely a granular degeneration, and its axis cylinder remains uninterrupted, the peripheral end exhibits inflammatory changes, and the functional elements suffer in a remarkable manner. The nuclei of the inter-annular segments of the surrounding protoplasm increase in size, press upon the parts within, and finally cut through the axis cylinder at the points opposite the nuclei. By careful observation Ranvier discovered that the axis cylinder is interrupted about the end of the third day after section; and it is exceedingly interesting that a complete anatomical explanation should thus be furnished of the fact observed by Longet, that the irritability of a divided nerve is lost from the third to the fourth day. The observation of Ranvier also furnishes an additional proof that the axis cylinder is the conducting element of the nerve. After the fourth day the inflammatory changes on the peripheral extremity of the divided nerve advance rapidly; the myeline of the medullary sheath is reduced to fragments, the nuclei multiply, and the vessels and fine connective tissue around the nerves participate in the change, which is the very opposite of a degenerative one, probably

on account of the absence of all nervous control from the section of the nerve on the central side.—*Med. Times and Gazette*, May 3, 1873.

2. *Experimental Researches in Cerebral Physiology and Pathology.*—Dr. DAVID FERRIER gives the following as the more important conclusions which he has arrived at from many extremely interesting and important experiments made by him on different animals in the laboratory of the West Riding Asylum, Wakefield. The details of method, experiments, and illustrations will be hereafter given in the reports of the above-mentioned institution.

1. The anterior portions of the cerebral hemisphere are the chief centres of voluntary motion and the active outward manifestation of intelligence.

2. The individual convolutions are separate and distinct centres; and in certain definite groups of convolutions (to some extent indicated by the researches of Fritsch and Hitzig), and in corresponding regions of non-convoluted brains, are localized the centres for the various movements of the eyelids, the face, the mouth, the ear, the neck, the hand, foot, and tail. Striking differences corresponding with the habits of the animal are to be found in the differentiation of the centres. Thus the centres for the tail in dogs, the paw in cats, and the lips and mouth in rabbits, are highly differentiated and pronounced.

3. The action of the hemispheres is in general crossed; but certain movements of the mouth, tongue, and neck, are bilaterally co-ordinated from each cerebral hemisphere.

4. The proximate causes of the different epilepsies are, as Dr. Hughlings Jackson supposes, "discharging lesions" of the different centres in the cerebral hemispheres. The affection may be limited artificially to one muscle or group of muscles, or may be made to involve all the muscles represented in the cerebral hemispheres, with foaming at the mouth, biting of the tongue, and loss of consciousness. When induced artificially in animals, the affection as a rule first invades the muscles most in voluntary use, in striking harmony with the clinical observations of Dr. Hughlings Jackson.

5. Chorea is of the same nature as epilepsy, dependent on momentary discharging lesions of the individual cerebral centres. In this respect, Dr. Hughlings Jackson's views are again experimentally confirmed.

6. The corpora striata have crossed action, and are centres for the muscles of the opposite side of the body. Powerful irritation of one causes rigid pleurothotonos, the flexors predominating over the extensors.

7. The optic thalamus, fornix, hippocampus major, and the convolutions grouped around it, have no motor signification.

8. The optic lobes or corpora quadrigemina, besides being concerned with vision and the movements of the iris, are centres for the extensor muscles of the head, trunk, and legs. Irritation of these centres causes rigid opisthotonos.

9. The cerebellum is the co-ordinating centre for the muscles of the eyeball. Each separate lobule (in rabbits) is a distinct centre for special alterations of the optic axes.

10. On the integrity of these centres depends the maintenance of the equilibrium of the body.

11. Nystagmus, or oscillation of the eyeballs, is an epileptiform affection of the cerebellar oculo-motorial centres.

12. These results explain many hitherto obscure symptoms of cerebral disease, and enable us to localize with greater certainty many forms of cerebral lesion.—*Brit. Med. Journal*, April 26, 1873.

3. *Pepsin and the Digestion of Fibrin without Pepsin.*—Experiments performed in the physiological laboratory of Heidelberg by GUSTAVE WOLFFHÜGEL under Kühne's direction, have led to results essentially differing from those of von Wittich and previous experimenters. Wolffhügel finds, 1, that pepsin is not diffusible. 2. That the pyloric glands produce no pepsin. 3. That both hydrochloric and nitric acids in solution, containing 0.4 per cent., at a temperature of 60° C., are capable of dissolving boiled fibrin, though somewhat slowly, and of converting it into peptone. 4. This power of forming peptones is perceptible in both acids at a temperature of 40° C. (104° F.). Though the action of

nitric acid is decidedly slower, on this account nitric acid is to be preferred to hydrochloric in experiments on the presence and action of pepsin.—*Lancet*, May 3, 1873, from *Pflüger's Archiv*, February, 1873.

4. *Relation of the Pulse to the Condition of the Stomach*.—Important observations have recently been made by MAYER and PRIBRAM on the reflex relations of the stomach to the centres of innervation for the circulation (*Centralblatt*, March 22, 1873). The previous experiments of Goltz showed, what has ever since been accepted, that irritation of the wall of the stomach reduces the frequency of the pulse. The present experimenters have determined that this slowing is accompanied by a rise in the arterial blood-pressure; and that the same result is obtained whether the irritation applied to the gastric wall is electrical or mechanical—for example, pinching the stomach with a forceps. The rise in the blood-pressure is plainly reflex, and its causation from contraction of the smaller or peripheral arteries. Similar results were obtained by inserting a bladder in the stomach and inflating it. On the other hand, the application of cold to the stomach, either by means of iced water or by ice itself, yielded no positive result, provided mechanical irritation was carefully avoided. Further experiments seemed to refer the effect on the circulation to irritation of the serous and muscular coats of the stomach, while irritation of the mucous membrane only did not evidently affect the pulse. These results may help to explain the sudden death which is frequently seen in severe injuries to the stomach. The experimenters point out that the opinion of Guy is also in agreement with the results at which they have arrived—that the frequency of the pulse falls under vegetable diet.—*Med. Times and Gaz.*, May 10, 1873.

5. *Influence of Barometric Pressure on the Phenomena of Life*.—In the course of some experiments performed for the purpose of ascertaining the effect of various atmospheric pressures on the phenomena of life, M. PAUL BERT made the extraordinary discovery that animals placed in highly compressed air died with convulsions. The same result took place in an atmosphere of pure oxygen when the compression had been carried to a much less extent, so that death was evidently due to the poisonous action of the oxygen in both cases. When sparrows are experimented on (*Comptes Rendus*, lxxvii. 443), convulsions occur when the pressure of oxygen in the receiver in which they are placed reaches $3\frac{1}{2}$ atmospheres. This pressure of oxygen can be produced by using either pure oxygen at a pressure of $3\frac{1}{2}$ or air at a pressure of 17 atmospheres. The convulsions are extremely violent and rapid when the pressure of oxygen reaches $4\frac{1}{2}$ atmospheres, corresponding to 22 atmospheres of ordinary air. They come on at the end of four or five minutes, continue for a few minutes, then cease, and again occur with more or less violence and frequency. When the pressure is high, death may occur in the first convulsion. They still continue after the bird has been removed from the receiver into the open air, and death may even occur after its removal. From experiments made on dogs, M. Bert finds that convulsions begin at a pressure of $3\frac{1}{2}$, and death occurs at a pressure of 5 atmospheres of oxygen. An examination of the blood shows that convulsions begin when the amount of oxygen in the blood, which is ordinarily only 18 to 20 per cent., rises to 28 or 30 per cent. in consequence of the pressure. Death occurs when the blood contains about 35 per cent. The quantity is not exactly the same in different animals, but it is certain that the fatal dose of oxygen in the blood is less than twice the quantity normally contained in it. There is no other poison, half the fatal dose of which may be present with impunity in the blood; and, therefore, strange as the assertion may appear, it is yet, says M. Bert, perfectly true, that oxygen is the most virulent poison known. The symptoms of poisoning, as seen in the dog, are both curious and frightful. When a dog, in which the proportion of oxygen in arterial blood has reached 32 per cent., is taken from the apparatus in which it has been subjected to the action of oxygen, it is generally in a state of tonic convulsion. The legs are stiff, the body is curved backwards and a little to one side, the eyes are prominent, the pupils dilated, and the jaws clenched. Slight relaxation soon occurs, but it is again followed by a renewed accession

of rigidity with clonic convulsions, resembling at once a convulsion from strychnia and an attack of tetanus. In the intervals relaxation is not complete, and the animal remains in a state of opisthotonos. During the convulsions respiration is suspended, but the heart continues to beat, though its pulsations are frequently extremely slow. Arterial pressure is considerably diminished. Sensibility is not destroyed, and sensory impressions seem to excite new convulsions. In cases of medium severity the convulsions, which appear at first every five or six minutes, become less frequent and then less violent; the rigidity during the intervals diminishes, and finally all symptoms disappear at the end of five, ten, or even twenty hours. In mild cases, instead of the convulsions being so violent that the animal is as rigid as a piece of wood, and may be lifted by one paw, there are unco-ordinated movements and local convulsions—symptoms, in fact, which strongly resemble those produced by carbonic acid. Sometimes the symptoms resemble those of epilepsy, and occasionally the actions of the animal seem to indicate some mental disorder.

In severe cases, when the amount of oxygen in the blood reaches 35 per cent., the rigidity is constant, with occasional clonic accessions, the teeth are ground and clenched together till they seem about to break, and death may occur after one or two convulsions within several minutes. The arterial blood then becomes black like that in asphyxia, and the heart continues to beat for several minutes after all movements of the animal have ceased. The convulsions produced by oxygen, like those of strychnia or carbolic acid, are due to its toxic action on the nerve-centres. They cease when chloroform is inhaled, and reappear when the anæsthesia passes off. When the sciatic nerve is cut, and the muscles which it supplies are thus separated from the nerve-centres, no convulsions take place in them. The convulsions continue after the animal has respired for some time in the open air, and the quantity of oxygen in the blood has fallen to the normal. It might, therefore, be imagined that some substance having a poisonous action on the nerve-centres had been formed in the blood under the influence of oxygen. This does not, however, seem to be the case, for a large quantity of blood taken from an animal in violent convulsions produced no injurious effect when injected into the veins of another animal. No alteration could be perceived in the form or size of the blood-corpuscles. The heart is the last organ which ceases to act. The motor nerves and muscles preserve their properties for the usual time after death. Animals which die during a convulsion become flaccid, and rigor mortis does not come on very quickly. Curiously enough, the temperature of the animal falls sometimes as much as 2° or 3° after the convulsions begin. It rises again at the end of some hours, if the animal is going to survive. Increased oxygenation does not then, as one would expect, cause a more rapid combustion and an elevation of temperature, but, on the contrary, seems to diminish combustion in the organism.

No explanation of these phenomena is offered by M. Bert; but the circumstance that excess of oxygen in the blood causes convulsions depending on an affection of the nerve-centres at once recalls the experiments of Kussmaul and Tenner, Rosenthal, Hermann, and Escher (*Pflüger's Archiv*, iii. 1) in which convulsions were produced by tying the bloodvessels passing to or from the brain. The blood thus caused to stagnate in the bloodvessels of the brain became deprived of oxygen and loaded with carbonic acid, and thus a local asphyxia of the brain, if it may be so termed, was produced, although the rest of the body was amply supplied with arterial blood. The same result would be produced, if spasm of the vessels should occur and arrest the circulation through them. The experiments made by Sadler on artificial circulation through the vessels of an excised muscle (*Ludwig's Arbeiten*, 1869, p. 212), as well as some unpublished ones made by the reporter on artificial circulation through those of the rabbit's ear, in Professor Ludwig's laboratory, and under his direction, show that when the circulation is arrested in an artery for some time, and thus local asphyxia of it is produced, it becomes dilated and allows blood to flow rapidly through it. After richly oxygenated blood has streamed through it for a very short time, however, the flow becomes very languid and soon ceases almost entirely, apparently from spasmodic contraction of the vessel. It seems

not improbable that the vessels supplying the nerve-centres may contract in the living animal under the influence of an extreme amount of oxygen in the blood, just as those of excised parts do under the stimulus of a moderate amount. Circulation being thus arrested, convulsions would occur just as if the vessels had been tied. Contraction of the vessels in other parts of the body also would retard the flow of blood through them; and the slowness of circulation thus induced would afford a ready explanation of the diminished oxidation and lowered temperature observed by M. Bert.—*Lond. Med. Record*, April 2, 1873, from *Comptes Rendus*, vols. lxxiv. and lxxv.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Mode of Action of Purgatives on the Intestines.*—Different hypotheses have been proposed to explain the manner of action of purgatives. About thirty years ago M. Poisseuille asserted that the action of saline purgatives was a purely physical one, and that the catharsis they produced was an endosmose of the serum of the blood through the coats of the vessels to the saline solution within the intestinal tube. M. Moreau confirmed this assertion by experiment. He drew out a knuckle of intestine of an animal, injected into it, after applying a ligature to the two ends, a solution of 4 grammes of sulphate of magnesia in 20 grammes of water. He then returned the intestine into the abdomen and after 24 hours he found a collection of liquid amounting to from 200 to 300 grammes, showing a considerable exosmose had occurred.

M. VULPIAN, it is stated (*Gazette Hebdom. de Méd. et de Chirurg.*, May 23d, 1873), has improved on M. Moreau's method of experimenting, so as to show the progress of the phenomena, and has communicated the results to the Biological Society of Paris, at their meeting on the 17th of May. Without entering into a detail of his experiments, we may state they prove that sulphate of magnesia produces an intense intestinal catarrh, without increasing the peristaltic movements; the phenomena of exosmosis are greatly modified; the fluids flow towards the mucous membrane and pass through it. At the same time, a certain portion of the sulphate of magnesia is absorbed, for an unusual amount of the salts of magnesia are found in the urine. The same phenomenon is observed in man. The day after a purgation with sulphate of magnesia an unusual amount of the salts of magnesia is found in the urine.

Resinous purgatives act in an analogous manner, but much more energetically, in some cases causing large ecchymoses and even true hemorrhages from rupture of the capillaries, and large bloody stools without increasing the peristaltic action.

7. *Pathogenic Influence on the Skin of Bromide of Potassium given Internally.*—Dr. J. NEUMANN has investigated this subject. He refers to the observations of Voisin, of Paris, and Mitchell, of Philadelphia, according to whom the employment of bromide of potassium in weak doses brings on eruptions similar to acne, with itching and the consecutive formation of indurated tubercles; whilst the prolonged use of the substance gives rise to the production of red tumours, which often become sore, of carbuncles, anthrax, eczema, and nettle-rash. Dr. Neumann states that, for his own part, he has observed eruptions very much like molluscoid acne coming on in successive outbreaks, and, in another case, a carbuncular eruption consisting of infiltrated tumours, with considerable loss of substance in the centre. The author inclines to think that the bromine passes into the blood, and thence into the various glands of the skin, and he accounts thus for the production of the eruption. It is known that the presence of bromide of potassium has been observed in the urine, saliva, and the secretions of the skin.—*Lancet*, May 10, 1873, from *Wiener Med. Wochenschrift*, No. 6, 1873.

8. *Physiological Effects and Clinical Application of Digitalis.*—According to ACKERMANN, when digitalis is administered to a healthy animal, it acts, in the first place, upon the heart. This effect of the drug is manifested by alterations in the frequency and character of the pulse—the frequency first diminishes, and then, after a time, suddenly and decidedly increases; this is succeeded in turn by a second slowing with great irregularity; and finally the cardiac contractions are completely arrested. The first of these effects of digitalis upon the heart is very familiar to those who administer it medicinally; but there are two points in regard to the slowing of the pulse that deserve greater attention than they receive. First, it is important to notice that the reduction of the frequency is entirely due to a lengthening of the cardiac diastole, the perceptible pulse being not more prolonged than before; and, secondly, with regard to the physiological explanation of this effect of digitalis upon the heart, we must now grant (according to Ackermann) that Traube is right in referring it to irritation of the peripheral branches of the vagus in the heart (inhibitory). The second effect of digitalis on heart is less familiar—the sudden and well-declared acceleration. This is to be referred, as Traube has again shown, to a paralysis of the nerve-fibres, previously irritated by the smaller dose, for the strongest induced current will not diminish the frequency. There is, however, in all probability an element of sympathetic (acceleratory) irritation in it as well. The acceleration may be followed by an immediate, sudden, and permanent arrest of the heart—that is, by death; more commonly, however, there is great irregularity of rhythm, with marked slowing of the stroke. This phenomenon, as it occurs with complete extinction of vagus-irritability, is a most alarming one, and is followed by an equally complete destruction of the irritability of the cardiac muscles—*i.e.*, death by paralysis of the heart.

Digitalis acts, in the second place, upon the circulation apart from the heart—an effect of the drug which, although much less generally known, because much more difficult to appreciate and measure, is yet of very great importance. This is the alteration in the arterial blood-pressure, which follows quite as speedily as the alteration in the frequency of the pulse, and is observed first as a rise, thereafter as a gradual decline to a point below the normal, and finally as a fall almost to zero. It is especially remarkable that these pressure-changes occur with the most various degrees of frequency of the pulse, so that the most different heights of pressure may be combined either with a frequent or with an infrequent pulse. This proves that digitalis must act upon some part of the circulation beyond the heart; and from the fact that the smaller arteries may be seen to contract in rabbits under the influence of digitalis, it may be considered as proved that the one important factor in the production of the elevation of arterial pressure is the contraction of the small bloodvessels of the body.

Perhaps the most interesting point in regard to the increased arterial pressure induced by digitalis is, that it is accompanied by a fall in the bodily temperature. Whether he is correct or not, Ackermann does not hesitate to follow Heidenhain, and to consider this diminution of the bodily temperature as a result of the increase of the arterial pressure, from the extra amount of blood carried through the cold surface of the body in a unit of time.

Bearing in mind these three well-ascertained points in the physiological action of digitalis—on the heart, on the blood-pressure, and on the bodily temperature—we turn now, with Ackermann, to review the therapeutical action of the drug in disease. When digitalis was still administered, not only empirically, but even haphazard, Traube referred its beneficial effect in certain diseases of the heart simply to its mechanical action upon the circulation. To begin with, there are always to be observed in such cases, after its administration, increased energy and regularity of the cardiac contractions corresponding with the diminished frequency in physiological experiments. There is, at the same time, or very soon after, in these cardiac cases, a remarkable reduction of the general venous congestion of the system, and of the oedemas, effusions, and catarrhs which it has induced. The wonderful effect of a few doses of digitalis in such a condition of system is not to be attributed solely to its direct cardiac action, but partly to its influence on the small vessels, which by their contraction in-

duce aortic hyperæmia, comparative venous anæmia, the return of exudations into the vessels, a watery condition of blood, and a corresponding diuresis. Now, it is plain that this result of the administration of digitalis in heart disease is exactly the same as the result of compensatory hypertrophy of the organ, when it occurs; and, accordingly, as long as the circulatory disturbances are compensated by hypertrophy in cardiac diseases, digitalis is not indicated—and not only not indicated, but contraindicated; for instances have occurred in which such uncalled-for administration of the drug has caused serious and even fatal hemorrhage from the over-filled vessels. The cardiac affections demanding digitalis are by far most commonly mitral insufficiency and obstruction. According to Corrigan, digitalis is contraindicated in aortic insufficiency, as the prolongation of the diastole allows increased regurgitation. Dr. B. W. Foster, however, and Traube, insist upon the value of the drug in aortic disease, saying that clinical experience bears them out. The “weak heart” of Stokes, referred by the Germans to granular and fatty degeneration of the cardiac muscles, induces similar compensatory disturbances, and offers a capital object for digitalis; but although a few doses of the drug relieve the circulation, diminish the cyanosis and dropsy, and increase the amount of urine, yet, according to Traube, this condition of the heart, depending as it does on paralysis of the vagus, impaired cardiac nutrition, and consequent fatty degeneration of its fibres, will advance in course of time to such a degree that digitalis will be unable to stimulate the insensible cardiac nerves. But even in this hopeless condition of the heart, while the frequency of the pulse does not fall with digitalis, the patient feels himself lightened by the drug, from its influence on the peripheral arteries.

Another well-known clinical effect of digitalis is that it increases the amount of urine passed. On this account it has been called a diuretic, but Ackermann believes that it is so indirectly only, through its influence on the heart, and perhaps by increasing the arterial pressure. One more result of the action of digitalis on the heart, and of the prolongation of the diastole, is that the cardiac muscle, which receives its nourishment principally in the state of relaxation, is placed under more favourable conditions of blood-supply.

The third physiological effect of digitalis is seen in its administration in febrile conditions, where it reduces the temperature of the body. This reduction of temperature is accompanied by the usual reduction of frequency of the pulse; but the two effects bear no constant relation to each other. The use of digitalis as an anti-pyretic is, moreover, to be seriously considered, as it frequently induces cardiac irregularity, which may end at any moment, as we said, in cardiac suspension. The whole question of digitalis in fever is obscure and unsettled.

The effects of digitalis on the stomach, bowels, etc., are usually so slight in chronic cardiac cases as to be neglected; but they may be of serious import in fevers—appearing as sickness, anorexia, etc. In very large doses the drug has been said to cause alarming nervous symptoms and an exanthematous disease of the skin; but these are doubtful.—*Med. Times and Gazette*, Feb. 8, 1873, from Volkmann's *Klinische Vorträge*, No. 48, Dec. 19, 1872.

9. *Infusion of the Leaves of the Solanum Lycopersicon as a Diuretic.*—M. STANISLAS MARTIN extols (*Connaiss. Médic.*) an infusion of the leaves of the *Solanum Lycopersicon* (tomato), as a diuretic.—*Revue de Thérap. Méd. Chirurg.*, 15 May, 1873.

10. *Nitrate of Potash and Quinia as Febrifuges.*—Dr. H. MACNAUGHTEN JONES states that for some years past he has frequently employed nitrate of potash and quinia in large doses in diseases where the temperature maintained a high range, and almost universally with success. He records several cases of simple pneumonia, of pneumonia complicated by typhoid symptoms, and of intermittent fever, where this plan was pursued with good results. The nitrate was given in doses of fifteen grains every six, or even three hours, whilst the quinia was ordered in ten-grain doses at corresponding intervals; sometimes a little ipecacuanha was added.—*Brit. Med. Journal*, March 1, 1873.

11. *Therapeutical Effects of Aconite and Crystallizable Aconitia.*—M. G. SÉE, of Paris, ranks aconite among the agents which paralyze the nervous system. The active principle has been lately isolated in France in a crystalline form, the aconitia previously obtained in Germany and England being the amorphous alkaloid. The crystallizable aconitia is sparingly soluble in water, but soluble in alcohol and ether, and especially in chloroform it acts on the motor system in the dose of $\frac{1}{20}$ of a milligramme (the $\frac{1}{1000}$ of 15 grains), for, when injected under the skin of a rabbit in this very small dose, it produces paralysis in a very short time. Dr. Sée considers that the physiological operation of aconitia resembles that of the woorara poison, for it acts on the peripheric extremities of the motor nerves at their terminations in the muscles. Aconitia administered in therapeutical doses by the mouth causes, after preliminary tingling of the tongue, a sensation of stiffness in the chest, followed by dyspnœa, and afterwards anæsthesia, which is the commencement of asphyxia. It is a medicine which should be given with great caution in consequence of its dangerous effects on the respiration. It has been principally employed in neuralgia, especially of the fifth pair of nerves, and of the sciatic and intercostal nerves. It has also been recommended in gout, acute rheumatism, septicæmia, and erysipelas, but although it has been extolled by some distinguished French practitioners, Dr. Sée does not admit its utility. It has been supposed to exert a beneficial effect in catarrh and bronchitis, and the result seems to be due to its property of diminishing the mucous secretions. It appears to be useful to singers, who often suffer from painful contraction of the larynx, which is cured by aconite. On the whole, Dr. Sée, who writes from the results of experience in a large hospital, does not seem to be much impressed with the therapeutical virtues of aconite or aconitia.—*British and Foreign Med. Chir. Rev.*, April, 1873, from *L'Union Médicale*, May, 1872.

12. *On the Oleate of Mercury.*—Mr. BERKELEY HILL states (*Practitioner*, April, 1873), that since this preparation was introduced to the notice of the profession by Mr. Marshall, about a year ago, I have employed it in a large number of cases in hospital and private practice, with the following results. In the first place, if continuously applied, it quickly produces the usual effects of mercury on the system, and if used in sufficient quantity causes salivation. Secondly, it is apt, in delicate fair-skinned persons, to excite violent smarting pain, which, though rarely lasting more than half an hour, if so much, is enough to disgust them with the remedy. The irritation may even cause erythema and slight vesication, though I have never seen any more serious local effect than this. To avoid these undesirable occurrences, Mr. Marshall has devised three preparations of different strengths, containing 20, 10, and 5 per cent. of peroxide of mercury respectively: to the weakest dilution, 10 per cent. of morphia as oleate of that base is added, to allay the irritation from the mercury, and assuage the local pain of inflammation, when used for affections of that kind.

The preparations are best made according to a formula prescribed by Mr. Martindale, the dispenser to University College Hospital: For the 20 per cent. solution, stir 10 drachms of oleic acid in a mortar, while 2 drachms of precipitated peroxide of mercury are gradually sprinkled into it, and triturate frequently during twenty-four hours, until the peroxide is dissolved and a gelatinous solution is formed. The 10 per cent. solution is made in exactly the same way, but the smaller quantity of oxide renders the compound more fluid. The morphia and mercury oleate is made by dissolving 1 drachm of pure alkaloid of morphia in 5 drachms of oleic acid and mixing the solution with 5 drachms of 10 per cent. oleate of mercury. It is necessary to use the oxide freshly precipitated from an aqueous solution, not one produced by dry heat; and heat should not be employed to dissolve the mercury in the acid, as even very moderate elevation of temperature causes some decomposition of the oxide to take place.

With one or other of these preparations the application of this form of mercury can be continued on even very sensitive skins. When used for inunction, instead of the grey ointment, about a scruple or half a drachm of the 20 per cent. jelly should be rubbed gently into the flank till it is absorbed by the

skin, which occurs in about eight or ten minutes, leaving the skin almost dry and not greasy. This may be repeated once or twice in twenty-four hours, of course changing the site of the inunction each time. The anointed part may be washed next day without fear. This quantity usually causes swelling and slight soreness of the gums in a week, if anointed once a day, and in four days if applied twice daily. Before using the stronger solution it is well to test the skin with the weaker form, lest too energetic application of the oleate should cause painful irritation and trouble. But I have found the 10 per cent. solution most useful as an adjuvant to the ordinary treatment by iodide of potash internally, or for persons whose stomachs do not bear mercury well. For example, in cases of leproid, or tubercular eruptions, relapsing after disappearing more than once, this form of mixed treatment is usually very successful.

The great advantage of the oleate over any other form of mercury, when externally applied, lies in the rapidity of its absorption, which makes it very serviceable as a kind of cosmetic; that is, to paint over syphilitic papules or stains in the face or other exposed parts. For this purpose I direct the patient to rub into the spots themselves, night and morning, a little of the 20 per cent. solution with the tip of the finger—the usual treatment being continued at the same time. It is remarkable to observe how rapidly the papules sink down and grow pale when the oleate is directly applied to them. If the 20 per cent. is too stimulating, the weaker ones may be employed, though their effect is less satisfactory.

Again, the oleates are very useful in fissures of the fingers about the nails or in the palms. Rubbing the 10 per cent., or, if there is much soreness, the 5 per cent. solution with morphia, into the fingers, at night, and sleeping in wash-leather gloves, is a very effectual way of healing these troublesome affections. By day the cracks should be well closed by court-plaster and plastic collodion, and gloves worn out of doors.

I have not had much success with the oleate in non-syphilitic affections, but I have not tried it extensively. It has proved a very effective parasiticide for pediculi, as its penetrating power enables it to diffuse itself thoroughly over the scalp and pubis. I have also used it to inflamed joints, as a controllable of inflammatory action, but I have not perceived any clear benefit to be derived from its use in such cases. In syphilitic affections the oleate is most serviceable, being a certain and less disagreeable cutaneous application than ointments, and really hastening the subsidence of papules and other disfigurements of exposed parts of the skin.

13. *Employment of Chromic Acid as a Caustic in Affections of the Throat and Larynx.*—Dr. ISAMBERT, of Paris, having found the application of chromic acid beneficial in various affections of the gums, mouth, palate, and pharynx, has applied the same remedy to the larynx itself, by means of the laryngoscopic sponges. His first object in this application was to destroy some epithelial vegetations and small warts, which are often observed at the inter-arytænoid commissure and in the neighbourhood of the vocal cords. The solutions he used were at first rather weak, but he was able to use stronger ones rather frequently, in the dose of 1 gramme (about 15 grains) to 8 grammes of water, and sometimes he used them even stronger. Dr. Isambert found that the patients bore the application very well, although at first it caused a little local irritation. He considers that one of the most valuable results obtained by this treatment is the rapid repression of cedematous conditions of the glottis, so as to render it unnecessary in some cases to perform the operation of tracheotomy, where this measure seems to be urgent. The chromic acid applied directly to the cedematous parts of the larynx reduces the volume of the swollen tissues, relieves the feeling of suffocation, and postpones, even if it does not supersede, the necessity for tracheotomy. In other cases, such as syphilitic contractions of the larynx, the specific nature of which might not have been evident at first sight, Dr. Isambert has been able to avoid tracheotomy, to gain the time necessary for recognizing the specific nature of the disease, and to cure the patient by the use of internal remedies, aided by mercurial inunctions to the surface of the body. In polypous diseases of the larynx, and epithelioma and cancer, the

chronic acid treatment is useless or injurious.—*British and Foreign Med. Chir. Rev.*, April, 1872, from *Bull. Gén. de Thérap.*, July, 1872.

14. *Artificial Fibrin as a Dietetic Substance*.—DR. JOHN GOODMAN calls attention (*Brit. Med. Journal*, May 17, 1873) to his discovery of this new dietetic substance. So far as he has employed it, he says, "it promises fair to be invaluable in medical practice, especially in cases of feeble alimentation and deficient nutrition, and second to none in those cases where rejection of food forms a prominent feature, or where the appetite and digestive powers are reduced to a minimum. As fibrinous material, it is of course highly nutritious, and eminently adapted to all cases where there is a deficiency of fibrin in the blood. It is, perhaps, unparalleled in its qualities of lightness and digestibility, and is moreover a great delicacy. In many urgent cases of rejection of food, etc., it not only remains where an egg otherwise cooked would not be tolerated, but its presence in the stomach has been found to create a feeling of want rather than of superfluity, and to promote rather than decrease the appetite for food.

"The production of this substance is within the reach of every sick room, and is effected with great facility. It is formed by exposing albuminous material to the operation or influence of cold water, for a given period; and on account of its great plenteousness we employ the ordinary hen's egg for its production. When the shell is broken and removed, and its contents are immersed in cold water for twelve hours or so, they are found to undergo a chemico-molecular change, and to become solid and insoluble. This change is indicated by the assumption by the transparent white of the egg of an opaque and snowy white appearance, which far surpasses that of an ordinary boiled egg. The product, and the fluid in which it is immersed, must now be submitted to the action of heat to the boiling point, when the fibrin will be ready for use."

15. *Solvent Power of Glycerine*.—MÉHU has confirmed the observations of Kleber, and gives the following table as one of sufficient authority to be consulted by physicians and pharmacists at all times.

One thousand parts of glycerine dissolve of—

Arsenious acid	20.00	Tartrate of potassa and	
Arsenic "	20.00	of iron	8.00
Benzoic "	10.00	Cyanide of potassium	32.00
Boric "	10.00	Tartarized antimony	5.50
Oxalic "	15.00	Bromide of potassium	25.00
Tannic "	50.00	Iodide of potassium	40.00
Alum	40.00	Morphia	0.45
Carbonate of ammonia	20.00	Acetate of morphia	20.00
Chloride of ammonium	20.00	Hydrochlorate of mor-	
Atropia	3.00	phia	20.00
Sulphate of atropia	33.00	Arsenate of soda	50.00
Chloride of barium	10.00	Bicarbonate of soda	3.00
Brucine	2.25	Neutral carbonate of	
Quinia (pure)	0.50	soda	98.00
Tannate of quinia	0.50	Phosphorus	0.20
Cinchonia	0.50	Acetate of lead	20.00
Sulphate of cinchonina	6.70	Sulphur	0.10
Acetate of copper	10.00	Strychnia	0.25
Sulphate of copper	30.00	Nitrate of strychnia	4.00
Lactate of iron	16.00	Sulphate of strychnia	22.50
Sulphate of iron	25.00	Veratria	1.00
Bichloride of mercury	7.50	Chloride of zinc	50.00
Iodine	1.90	Iodide of zinc	40.00
Chlorate of potassa	3.50	Sulphate of zinc	35.00

—*Lond. Med. Record*, April 2, 1873, from *Annuaire de Pharmacie*, 1872.

16. *Clinical Means of Recognizing Mercury in the Excretions.*—M. MAYENCON and Dr. BERGERET, in an interesting paper on this subject in Robin's *Journal d'Anatomie*, No. 1, 1873, give the following as the conclusions at which they have arrived: 1. That mercury and its salts are absorbed by the skin as well as by the stomach. 2. That of the mercury absorbed a part, and that the major part, is immediately eliminated, whilst the smaller part impregnated the tissues, from which it is only insensibly eliminated. Even this part, however, is rather quickly eliminated if the use of the medicine has not extended over any great length of time. 3. Elimination seems to be effected by all the excrementitious fluids, but chiefly by the urine and the intestinal juices. 4. Iodine has a marked effect in clearing away mercury from the tissues. 5. Mercury and mercurial preparations discharged by the humours, and especially by the urine, are readily discoverable by the action of a voltaic element—iron and platinum. The mercury forms a metallic coating on the platinum, and should then be converted into the bichloride, and finally into red biniodide with a solution of iodide of potassium.—*Lancet*, April 5, 1873.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

17. *Infantile Enteralgia.*—Dr. JOHN BOYD, in an interesting paper (*Edin. Med. Journal*, Feb. 1873) on an affection which he terms "infantile enteralgia," remarks: "In male children especially, from two weeks to four or six months, of a lively mobile temperament, we very frequently observe them subject to attacks of abdominal pain, which come on suddenly, generally at night, commencing at a little after twelve, and continuing with slight intermissions to four or five in the morning. The little sufferer draws up its knees and tosses about in the nurse's arms; the cry varying from an agonized scream to a plaintive wail, with intervals of sobs and long-drawn breaths; but neither the pulse nor the respiration is accelerated, nor is there usually any abnormal elevation of temperature. The natural language of the malady denotes unmistakably that the bowels are the seat of the pain, though the tenderness on pressure does not seem excessive. After a time the local uneasiness appears to have produced a quasi-hysterical action on the nervous system. If the infant be old enough to be attracted by any glittering object, or a series of moderately loud noises, he may forget his woes for a time, and all at once recollect them and resume his ululations as vehemently as before; bearing on his countenance that expression of conscious ill-usage which is so generally seen in those afflicted beings of maturer age and opposite sex, of whom it has been quaintly remarked that they are so very ill because there is so very little really the matter with them. After disturbing the whole household for the best part of the night and exhausting all the curative efforts of the establishment, the young gentleman falls quietly asleep, and seems so well and fresh next day that the history of the direful nocturnal events sounds like a baseless romance when related even to sympathetic auditors. Yet such experiences constitute one of the most painful trials which the youthful primipara is called upon to undergo, although Mater-familias of fifteen or twenty years' standing sustains them in general with philosophic equanimity.

"The enteralgia referred to does not commonly depend on mere fecal accumulation. In thriving children who are not as yet subjected to the pangs of teething, the alvine evacuations are comparatively scanty so long as the maternal lacteal secretion is the sole or preponderating source of nutrition. In such cases I have invariably noticed, that so long as the abdominal suffering lasts, the urination is suspended, that a true ischuria renalis exists for the time being; and that whenever micturition occurs the crying and distress cease, presenting exactly the same termination as that of the *passio hysterica*—the copious flow of a large quantity of clear limpid fluid. Acting on this indication, I have for

many years past been in the habit, whenever such attacks were brought under my care, of prescribing from eight to ten minims of spiritus etheris nitrosi in a drachm of water, to children of the age above mentioned. Generally after the administration of this draught there occurs a discharge of flatus from the superior or inferior orifice of the alimentary canal—the ether acting as a diffusible stimulant and carminative; but without exception the passage of urine in large quantity takes place within a few minutes after its imbibition, the cries cease, and the small patient sinks into a refreshing slumber. Whatever view may be taken as to the causation of the malady in question—whether it may depend on a non-secretion depending on a temporary congestion of the glomeruli of the kidney or a partial paralysis of the more elaborated and complex urinary passages of the male, or merely from the presence of flatus in the colon mechanically suspending the renal function,—the fact is well ascertained that the phenomena above depicted are extremely frequent in male infants of all classes, and every variety of social and hygienic surroundings; also, that in some instances very serious mischiefs have been the consequence of such nocturnal pervagitus.”

18. *Hemorrhage of the Pons Varolii with Saccharine Urine.*—M. LIONVILLE relates (*Gaz. des Hôpitaux*, Feb. 8) a case of complete paralysis, with only slight modification of sensation. The patient was picked up in the street insensible. The objective symptoms were those of hemorrhage in the pons Varolii. The urine was drawn off, and found full of albumen and sugar. There was no indication of Bright's disease. The presumption was, in accordance with Bernard's celebrated experiment, that the posterior wall of the fourth ventricle was compressed. Speedy death occurred. The necropsy showed that the hemorrhage had invaded a large part of the pons, and affected the upper part (that above the auditory nerves) of the wall of the fourth ventricle.—*London Med. Record*, April 2, 1873.

19. *Disseminated Suppuration of the Kidney secondary to certain conditions of Urinary Disturbance.*—Dr. W. H. DICKINSON, in a paper which he recently read before the Royal Medical and Chirurgical Society of London (*Lancet*, March 8, 1873), described the peculiar suppurative condition which is sometimes spoken of as the “surgical kidney,” and is produced, as he shows, by the contact of unhealthy urine. Of all renal disorders, next to those described by Bright, it is the most destructive to life. It may almost be said to form the natural termination of stricture of the urethra, and is the especial danger which attends the use of the catheter and lithotrite.

The renal change which is always associated with signs of pelvic and vesical inflammation, and often with alterations of the gland dependent on wasting pressure and chronic vascular disturbance, essentially consists of a peculiar turgidity and friability of the renal structure, with the formation of small scattered abscesses, or soft yellow deposits antecedent to abscesses, throughout its structure. With these are usually seen conspicuous white lines in the cones, which are morbidly occupied straight tubes.

With this condition the microscope shows more or less dilatation of the straight tubes, distension of, or coagulation within, the bloodvessels associated with them, and disseminated intertubular suppuration, the distribution of which is regulated by the course of the veins. (The microscopic appearances were illustrated by drawings which show the dilatation of the straight tubes; the irregular repletion of, or coagulation within, the vessels of the cones and the larger veins of the cortex; and the origination of abscesses around the affected vessels and throughout limited tracts of the intertubular tissues. The swelling of the intertubular tissue where thus infiltrated by the new cellular formation was strikingly depicted in contrast with the slender network presented by the same structure in a part of the gland exempt from the change.)

Taking the structural changes in their mutual relation, the usual dilatation of the tubular exits, the morbid occupation of the veins, and the general absence of tubal inflammation, the nature of the process is clear. The disorder has its origin in the regurgitation of urine charged with morbid products.

This occupies and generally distends the straight ducts, and thence enters the neighbouring bloodvessels, and charges them with an infection resembling in its results that of pyæmia. This is distributed by the veins to the rest of the gland, sowing abscesses in their course, and ultimately causing constitutional symptoms analogous to those of pyæmia when otherwise derived.

The urine being obviously either the source or the vehicle of the morbid matter, it remains to inquire whence and in what circumstances it becomes thus contaminated. To help in answering these questions the author has collected the particulars of 69 cases from the post-mortem books of St. George's Hospital. The disorder was traced to mechanical obstacles to the escape of urine (stricture or enlarged prostate) in 31 cases; to paralysis of the bladder in 17; to stone in the bladder or operation for its removal in 15; to cystitis from other causes in 5; and in 1 to a renal calculus complicated with enlargement of the prostate. Looking at the urine as directly connected with the origin of the disease, it appears that three conditions usually concur—retention, ammoniacal decomposition, and admixture with the products of mucous inflammation. Of these, ammoniacal decomposition appears to be essential, or at least to be constantly present. The urine is also generally fetid, and more or less mixed with vesical products, pus, mucus, and blood. The ammoniacal change, although possibly arising independently of mucous inflammation, produces it so constantly that the origin of the disease is always thus complicated. The clinical antecedents to this condition are fundamentally of two kinds—those which begin with retention, and those which begin with cystitis; both in the end producing an ammoniacal and putrescent state of urine. Mechanical obstacles and loss of expulsive power, belonging to the first and larger class, occasion the retention and subsequent decomposition of urine, and its consequent admixture with the products of mucous inflammation. Stone and other vesical irritants, belonging to the second class, begin by causing morbid vesical discharges, which render the urine prone to decomposition, and ultimately induce in it a putrescent condition, not altogether dissimilar to that which springs from retention. The rarity of the renal disease as a consequence of stone in the kidneys is probably to be explained by the less putrefactive tendency of the discharges from the pelvic membrane, or of the urine in that cavity.

In cases otherwise so tending, catheterization, lithotrity, or some such instrumental proceeding, seems sometimes to act as the immediate instigator of the morbid process, as is witnessed by the common phrase which stigmatizes the disease as the "surgical kidney." The disorder, however, may arise independently of any surgical intervention, and would perhaps be better distinguished by the term *uriseptic*, which would declare its general clinical relations more comprehensively.

Having regard to recent researches which have associated the lower kinds of organic life with pyæmia, it is worth noting that the condition of urine which causes the disease now in question is one in which vibriones and bacteria abound. From this, however, no inference as to the nature of the virus can be safely drawn, except that it is associated with decomposition.

Passing to the symptoms of the disease, they have a general resemblance to those of pyæmia, being those of blood-poisoning rather than of renal inflammation. Unlike what happens with pyæmia, organs other than the kidney appear seldom to share in the suppurative process. The complaint usually ends fatally within three weeks of the first symptom, though there is evidence that recovery sometimes occurs. Perirenal suppuration is an occasional result.

In treatment our efforts must be directed chiefly to prevention, to which end, beyond cautious surgery, measures of two kinds suggest themselves. First, the preservation or restoration of the natural acidity of the urine, a matter of most difficulty where it is most needed; secondly, as a suggestion as yet unwarranted by experience, the introduction of antiseptics by injection into the bladder.

To sum up: the form of renal suppuration which may be termed *uriseptic* has its origin in ammoniacal and putrid urine, poison from which is conveyed by the veins into the substance of the kidney, and thence infects the system, causing symptoms in some respects resembling those of pyæmia. As this form

of disease is little obedient to curative medicine, though not necessarily fatal, our efforts must be directed towards the correction of the state of urine from which it springs.

20. *The Nature and Treatment of the Constitutional Forms of Eczema.*—Dr. E. D. MAPOTHER, in a paper read before the Surgical Society of Ireland, observed that if the interest attaching to a disease be proportional to its frequency, eczema is most worthy of attention, for one-third of skin diseases are forms of this malady.

The causes and treatment of those forms due to sources of local irritation are thoroughly understood; for example, those due to the action of alkalies in washerwomen, sugar mites in grocers, the flow of tears from strumous eyes, the gravitation of the blood in varicose veins, are cured by the removal of the exciting cause and some emollient application, of which bran stupes and bran poultices are the best.

When eczema, on the contrary, affects large surfaces of the body without any local irritation, is symmetrical, apt to relapse, and (as is frequently the case) traceable in several members of the same family, some constitutional cause evidently exists, and should be sought for if we wish to treat the disease scientifically. The French call this cause "the dartrous diathesis," *dartre* being a popular term synonymous with "heat in the blood" in our vernacular; they confess ignorance of its nature, and only recognize it by aptness for relapse in eczema and lichen, and psoriasis as well. Dr. Mapother has long been inclined to hold with Golding Bird that excess of uric acid in the blood is this constitutional cause. Dr. Bird says: "I have been two or three times consulted in the cases of patients lying bed-ridden from rheumatic gout, in whom one or both legs were covered with an eczematous eruption, and the parts on which the exudation from the surface had dried had been actually frosted with microscopic crystals of urate of soda."

The following facts seem to him to prove that the gout poison is the cause of eczema:—

1. Many reliable observers have obtained uric acid and urates from the exudation of eczema, and their increase in the urine in the chronic stage of each disease is undoubted.

2. There is a great increase of fibrin in the blood, and it exudes and spontaneously coagulates on the raw surface.

3. Both diseases are characterized by great tendency to œdema and desquamation, which latter, of course, is universal in eczema, and occurs in three-fourths of the cases of gout when localized.

4. Gout can be shown to be hereditary in about three-fifths of the cases, and such predisposition can be shown in about an equal proportion of cases of general eczema. The greater proneness of the male sex is observable in both diseases.

5. Every one must have remarked the frequent consequence of symptoms of gout or of rheumatic gout and eczema. The Chelsea pensioners and the poorer agricultural people of this country exhibit this concurrence on the largest scale. I have seen very few cases of general eczema which had not been preceded or accompanied by what is so well known as acid or gouty dyspepsia.

6. It is an aphorism of Hippocrates that gouty attacks are most frequent in spring and autumn, and the same may be undoubtedly said of eczema.

7. The parts most distant from the circulatory force of the heart and least vascular—for example, the extremities and ears—are the most frequent seats of each disease, as the urates are most easily deposited.

8. And lastly, the treatment proven to be useful in gout is usually successful in eczema.

Lithia, Dr. Mapother has found of the greatest use, as would be anticipated from its extraordinary powers of combining and dissolving with urate of soda and uric acid. It never fails to act as a diuretic, and the derivative influence from the skin to the more extensive surface of the kidney can be easily understood.

Dr. Mapother usually combines colchicum with lithia.

It would appear that colchicum has no power of increasing the excretion of the solids of urine, but it is now generally believed to check the formation of urea and uric acid, a fact anticipated by the sagacity of Dr. Graves, whose physiological deductions were so remarkable.

In inveterate cases of eczema arsenic may be necessary, and that metalloïd is of great repute in chronic gouty and rheumatic affections.

Lastly, sulphur internally and externally, especially when used in the waters of Harrogate, Leuk in Switzerland, and Lisdunvarna, nearer home, is of equal efficacy in gouty and eczematous affections.

A few words about external treatment. Carbolic acid diluted with seven parts of lard keeps the skin pliable, prevents suppuration and fetor, and has probably some astringent power. In cases of universal eczema, which are rare, starch baths, or, still better, bran baths, are called for, to check the excessive cutaneous transpiration.

Dr. Mapother strives to show that constitutional eczema depends on the gouty diathesis, and should be treated according to the well-known therapeutic indications observed in that condition.—*The Practitioner*, May, 1873, from *Medical Press and Circular*, Feb. 19, 1873.

21. *Alterations of the Nervous System of the Great Sympathetic in Cases of Constitutional Syphilis.*—Dr. PETROW on examining portions of the plexus of the great sympathetic which he had taken (ten to twenty-four hours after death) from the bodies of individuals affected with acquired constitutional syphilis, has stated two sorts of pathological changes: 1. Modifications of the protoplasma of nervous cells which become loaded with brilliant pigmentary corpuscles, increasing with the age of the disease, and often accompanied by colloid transformation of the cells; the cells of the endothelium surrounding the nervous cells frequently undergo the same gelatiniform transformation, and cannot then be distinguished from the nervous cells. These changes can exist without the interstitial connective tissue being impaired. 2. Modifications of the interstitial connective tissue with hyperplasia of the fibres, constituting large irregular fasciculi, which push aside and compress the nervous cells and fibres. The cells are then atrophied, irregular, and dotted with pigment, whilst the fibres are flattened, and their myelin shows slight granulations.—*Lancet*, May 10, from *Virchow's Archiv*, Bd. 57, heft 1, 1873.

22. *Acute Bronchocele.*—LUDWIG describes (*Archiv der Heilkunde*, vol. xiv., No. 6) the case of a gentleman, who, after suffering from violent paroxysms of cough for some days, was suddenly seized with a swelling on the front of the neck, which impeded respiration. There was found to be an elastic swelling extending downwards from four centimetres below the middle of the thyroid cartilage nearly to the sternum, and to the sterno-mastoid muscle on each side. In the course of a few hours, it increased to the size of a child's head; the dyspnoea became more intense, and deglutition was difficult. There was no pulsation in the tumour. Soon, however, it began to diminish; and the next day it had entirely disappeared. Ludwig regards the case as one of acute hyperæmia of the thyroid body, but cannot assign a cause.—*Brit. Med. Journal*, April 5, 1873, from *Berliner Klin. Wochenschr.*, March 3.

23. *Histology of the Blood of the Insane.*—Dr. HENRY SUTHERLAND, in a paper read before the Royal Med. and Chir. Soc., April 22, 1873, presented the results of the microscopical examination of the blood of 143 lunatics. The conclusions he draws from the examination were as follows: That in the insane generally a leucocythæmic condition frequently exists. That any great increase in the number of white corpuscles at the expense of the red, and an absence of rouleaux from the blood of the insane, are conditions which generally indicate a very low degree of vitality. That in general paralysis, epileptic insanity, and masturbating insanity, the blood is more deteriorated, and the vitality is more lowered, in the male than in the female. That in mania, melancholia, and dementia, the blood is more deteriorated and the vitality is more lowered in the female than in the male.

24. *Treatment of Basedow's Disease.*—The three essential features of Basedow's disease are palpitation and frequent action of the heart, swelling of the thyroid gland, and exophthalmos. Its relations to chlorosis are obvious, as its occurrence in females chiefly, and its frequent association with irregularities of the menstrual function, show. Nevertheless it occurs in men, and even in children. Drs. EULENBURG and GUTTMAN, in speaking of the mode of treatment to be adopted, remarked that whilst formerly tonics were very generally employed with the object of improving the blood, as well as remedies that lowered the action of the heart, notwithstanding that experience demonstrated how little benefit was to be obtained by these means, in recent times the cure of the disease has been attempted by applying continuous electrical currents to the sympathetic in the neck. Dusch, it appears, was the first who adopted this means in a case which had long been otherwise treated without effect, and found that the application of from 10 to 20 elements reduced the pulse from 130 to 70, and even to 64 in the minute, the exophthalmos at the same time undergoing considerable diminution. M.M. Guttman and Eulenburg tried the same means in 1867, and found that in a woman suffering from the disease, and having a pulse frequency of 108 to 130, with unusual tension of the carotids, galvanization of the cervical sympathetic with a very weak ascending current of only six or eight elements, a gradual fall of the pulse-frequency took place from 124 to 84, and even to 70, with coincident diminished tension in the carotid and radial arteries. This plan of treatment, however, was not continued long enough to cause much diminution in the size of the tumour of the thyroid or of the exophthalmos. Since then they have applied the current in four other cases, and in all with the effect of ameliorating the cardiac symptoms, but in none long enough to cause material improvement of the other symptoms. Chvostek has made numerous experiments on galvanization of the sympathetic in these cases, and in no less than thirteen of them has nearly effected a complete cure. In his hands the influence on the gland was well marked, whilst it was less distinct on the activity of the heart. Moritz Meyer also reports four cases where the thyroïdal tumour was by the same means almost entirely abolished. (*Die Pathologie des Sympathicus*; Eulenburg and Guttman, 1873.) *The Practitioner*, March, 1873.

25. *Phosphorus in Certain Forms of Disease of the Nervous System.*—Dr. DICKINSON has recently been experimenting clinically with phosphorus in cases of affections of the nervous system characterized by deficiency of nervous energy, and has obtained decided evidence of the value of this remedy (see *The Practitioner* for April, 1873). He recommends a method by which phosphorus can be given in a form at once active and inoffensive, namely, dissolved in oil or lard, and inclosed in a gelatine capsule; the dose is about $\frac{3}{50}$ of a grain, and it may be taken two or three times a day, always after food.

26. *Ergot of Rye in Hæmoptysis of Phthisis.*—Dr. F. E. ANSTIE has published (*The Practitioner*, Nos. for Feb., Apr., and May, 1873) a series of articles with cases illustrative of the efficacy of ergot in the hæmoptysis of phthisis. He thinks that he has now established the facts "(a) of the direct action of ergot in the cases which I have recorded; (b) of its superiority in several of these cases to other styptics that had been tried; (c) the probability, from physiological analogies, that ergot would act more universally as a checker of hæmoptysis than the routine remedies with which we are familiar; (d) also that it is perfectly safe for the purpose in view, and in this respect is superior to digitalis, which otherwise resembles it a good deal."

"One of the best proofs," he says, "of the reality of a supposed action of any drug is afforded when the effects, which were comparatively slight or dubious after the administration of the rougher preparations, become more marked and apparent in proportion as fewer and more concentrated preparations come to be employed in practice. Now this is precisely the history of ergot as a remedy for hæmorrhage. Used at first in the form of infusion or tincture, it was only moderately efficacious; and indeed, so late as 1870, Nothnagel¹ ex-

¹ *Arzneimittellehre*. Berlin, Hirschwald.

pressly states that which I have been endeavouring to show can no longer be considered true, viz., that ergot is not superior to acetate of lead, or sesquichloride of iron in hæmoptysis. But the liquid extract, given by the stomach, has given even better and more certain results, not only in my hands but in those of several others. And the hypodermic injection of Bonjean's ergotin (which I have used for other purposes, but not for hæmoptysis) has given still more excellent promise, more especially in the hands of Drasche, of Jamieson, and of Dr. Currie Ritchie of Manchester; the latter gentleman published an excellent paper on the subject in the *Practitioner* for December, 1871.

"Meantime there have sprung up other collateral illustrations of the effectiveness of ergot in producing contraction of the arterioles and moderating the heart's action: of which the most remarkable is Langenbeck's discovery of the therapeutic use of ergotine injections in aneurism. It is true that this latter subject is as yet not at all completely developed; but enough has been proved to strengthen materially the general mass of evidence in favour of the belief that ergot acts precisely in the manner in which we should desire a pulmonary hæmostatic to act. I of course do not say that we shall not possibly discover a yet more useful remedy for hæmoptysis, but at present we probably possess none equal to it. Over and above the important resource which ergot seems to afford when hemorrhage is actually dangerous in amount, and when such remedies as gallic acid, acetate of lead, or muriate of iron have failed, I think that ergot is likely to be the most appropriate of all hæmostatics for the hemorrhage of early phthisis, where it may be hoped that the lung has as yet undergone very little structural change. The prompt suppression of all oozing into the air-cells which, in view of the danger of phthisis *ab hæmoptoe*, it is so important to effect, can probably be in no way so effectually accomplished as by the employment of ergot.

"Nor do I prefer the gastric administration, although in the cases recorded I employed it. For getting the best results I can scarcely doubt that the hypodermic injection of ergotine is a decidedly superior method. But I was personally anxious to see whether the remedy would prove practically effective when given in a form which is much less troublesome, and consequently more adapted to every-day practice, than the hypodermic injection would be. I hope I have shown that it is effective in a very encouraging degree, and that the profession will soon come to recognize the preferability of a direct recourse to its use in hæmoptysis, instead of the routine employment of a series of astringent remedies which are considerably less uniform in their action."

27. *Treatment of Elephantiasis by Compression.*—In the *Anfiteatro Anatomico Español* of Feb. 28, is described a case of elephantiasis Arabum occurring in a young man aged twenty, who came under the care of Dr. VELASCO, at Zaranz in Guipuscoa. The limb was greatly enlarged, the circumference at the centre of the thigh being about thirty-four inches, and at the calf of the leg twenty-four inches. The skin was rough and indurated, but otherwise not much changed in appearance. The only treatment adopted was the application of compression by means of a strong bandage four inches wide, applied spirally from the toes to the groin, and over it a strong linen legging. Under this treatment the limb regained its normal dimensions in the course of a year. —*London Med. Record*, April 2, 1873.

28. *Use of the Sulphites and Hyposulphites in Intermittent Fever.*—In an exhaustive treatise recently brought before the Royal Institute of Lombardy, Dr. G. FARALLI, after examining critically the results of all the therapeutical experiments that have been made until now with the sulphites, especially in intermittent fever, arrived at the following conclusions, which he considers to be definitive: 1. It is not shown that intermittent is of a zymotic character. 2. However, the sulphites in many cases cure intermittent fever, though their action is not so rapid and constant as that of quinia. 3. Their mode of action seems to depend on their reductive, rather than on their anti-fermentative, power. 4. The only result really due to them, and established by a number of accurate observations, is the greater rapidity with which they seem to combat

abdominal phenomena. 5. Their protracted use brings on a certain degree of anæmia, and thus favours the development of paludal cachexia. 6. Their prophylactic property, which had been imagined *a priori*, is not established by accurate observations, as is that of sulphate of quinia. 7. In the treatment of intermittent fever the sulphites are much less efficacious than cinchona and its preparations, and it is only when these have failed that recourse may be had to the sulphites. 8. Preparations of arsenic, which should seldom be used in miasmatic fever, are yet better than the sulphites for combating paludal cachexia. 9. Out of the three methods generally employed in the treatment of periodic fevers, the sulphites and hyposulphites, manifestly inferior to quinia, both as a prophylactic and a curative means, must be considered as even less efficacious than the preparations of arsenic.—*Lancet*, May 3, 1873.

29. *Propagation of Typhoid Fever by Milk*.—In the summer of 1872 an epidemic broke out in the village of Armley (in the borough of Leeds, England) which Dr. BALLARD, in an official report just published, proves, beyond reasonable doubt, was propagated through the medium of the milk supply. It will be remembered that a similar epidemic broke out at Islington, and which Dr. Ballard proved to be due to the same cause. (See No. of this Journal for Jan. 1871, p. 270.)

Dr. Ballard in his report of the epidemic at Armley (the *Lancet*, April 5, 1873), shows how remarkably the fever picked out the customers of the dairy-men, who is believed to have contracted the fever in a neighbouring locality five or six weeks before the epidemic began; how the largest consumers were among the earliest and the smallest among the latest attacked; and from the different facts stated and line of argument indicated he comes to the conclusion that the outbreak was due to the distribution of milk from the particular dairy of the infected dairyman, which milk had in some way become contaminated with the poison of enteric fever. He then proceeds to show how this contamination may have occurred, and proves that a well in the dairyman's yard used for dairy and domestic purposes was liable to be contaminated by the contents of a privy and a dung-hole, into one of which, if not both, the discharges of the dairyman when ill would be thrown; and he further shows that the sudden outburst of fever occurred within a fortnight of the period when the well would most probably have become polluted in the foregoing manner, while the time of its cessation followed the closure of the well at an interval consistent with the theory of the polluted water (added doubtless to the milk) being the efficient agent in the propagation of the fever.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

30. *Development of Cancer of the Skin*.—Dr. WM. H. CARMALT, of New York, writes us, that the notice of his paper in *Virchow's Archiv* on this subject, copied in our preceding number, page 546, from the *London Medical Record*, does not fairly represent his views, and he has favoured us with a copy of his paper which we had not previously seen.

The aim of Dr. C. in his paper appears to be to show—

1st. That cancer frequently originates from the epithelium of the hair follicles.
2d. That it does not originate from the endothelium of lymph vessels as alleged by Köster.

3d. The wandering capability of cancer cells, which though suggested before, he claims to have been the first to describe from actual observation. He has seen in two cases in sections of a freshly cut into cancer of the breast, a throwing out and retraction of processes by the cancer cells, *although* there was not noticed any *absolute change* of place as is seen in white blood corpuscles.

In an instance of round-celled sarcoma of the axilla he observed a similar

amount of motion in the proper elements of the tumour. In all cases the observations were made on scrapings obtained by a knife heated to blood temperature, placed on a Stricker's warming stage in a drop of the serum of the patient's blood.

31. *Renal Abscess containing Calculus relieved by Operation.*—An interesting case of this is related (*Ed. Med. Journ.*, Apr. 1873), by Dr. THOS. ANNANDALE. The subject of it was a farmer, æt. 63, who had for nearly twelve months suffered from uneasiness in right lumbar region, to which he had given but little attention. He had been under treatment for gastric and renal derangement, by Dr. DEWAR for six weeks, when Mr. A. was called to see him in consultation on the 29th April.

There was at this time tenderness on pressure over the lower half of the right kidney, and below it in the direction of the ureter. A very slight fulness in the same region was noted, but no marked swelling could be detected. The patient was much emaciated and exhausted from the irritative fever, the signs of which were most apparent. No fluctuation could be felt, and the introduction of a fine trocar and canula into the right lumbar region gave no result.

Mr. A. saw patient again 23d May, when his "local symptoms were unchanged, except that through the anterior abdominal wall there was a feeling, not very distinct, of deep fluctuation immediately below the region of the affected kidney. His general symptoms were much worse, and he urgently begged me to try and do something for his relief, as he felt sure that he could not live twenty-four hours longer in his present state.

"After a careful consideration of his case, my colleague and myself felt very sure that there must be suppuration in the region of the right kidney, and as the patient's condition seemed hopeless unless relief was given, it appeared to us that an exploratory incision was the proper and justifiable proceeding. The patient's consent having been readily obtained, chloroform was cautiously administered until complete anæsthesia was produced. I then made an incision through the abdominal wall on the right side, in the situation and direction of the incision employed for the ligature of the common iliac artery, except that it did not extend quite so high up. The peritoneum having been exposed, it, together with the abdominal contents, was carefully pushed inwards towards the middle line, until the outer edge of the psoas muscle was reached with the finger. On endeavouring to separate the peritoneum still further towards the upper end of the wound, it was found to be firmly adherent at this point; but after a little careful scratching with the finger-nail the adhesion gave way, and the finger passed into a cavity outside the peritoneum, from which there was a flow of very offensive pus. A little further separation with the finger caused the escape more freely, and also determined the presence in the abscess cavity of a small calculus, which was seized with forceps and removed. This calculus was the size of a horse-bean, oval in shape, and composed principally of phosphate of lime, with a small quantity of the triple phosphate, and a trace of animal matter.

"The abscess having been emptied, its cavity was sponged out with a solution of sulphurous acid, and the edges of the abdominal wound were brought together with sutures, a free opening, however, being left at its lower end for the better escape of pus or other fluids from the cavity.

"The operation gave great relief to the patient, and his progress was most satisfactory up to the fifth day, when for the first time a small quantity of thin feculent matter was noticed to pass by the wound; and there was some pain in, and swelling of, the abdomen, with an increase of the pulse and a rise in the temperature. These symptoms passed off after the removal by Dr. Dewar of a large quantity of hard fecal matter which was obstructing the rectum, and the patient without any further drawback made a complete recovery. Small quantities of fecal matter continued to pass by the wound for nine days after the operation, but from this time no further discharge was observed. At the end of a month the patient was able to walk about, and up to the present time he remains perfectly well and strong."

Mr. A. remarks that the case was evidently one of renal calculus, which had

given rise to suppuration and ulceration, and had in this way escaped from the kidney. The abscess passing downwards was preparing to empty itself into the ascending colon or cæcum : and had the operation not been performed, and the patient lived, it would in all probability have shortly opened into the intestine, and the pus have been discharged by the rectum.

"In the treatment of this case, I only now regret that the exploratory incision was not made sooner ; for, if it had been the patient's sufferings would have been earlier relieved, and the fistulous communication with the intestine prevented.

"I preferred making the incision through the anterior abdominal wall instead of in the lumbar region, because the fluctuation, although never very distinct, could only be felt from the former situation, and the introduction of the trocar deeply into the lumbar region failed to obtain any results. The rapid and complete closing of the fistulous opening was an interesting point in the progress of the case, and proves, I think, that the opening of communication with the intestine was small, and that the free exploratory incision, by allowing the pus to escape readily, tended to prevent further destruction of the intestinal wall."

32. *Chronic Cystitis with Putrescent Urine.*—Mr. W. H. DAY records (*Brit. Med. Journal*, May 10, 1873) an interesting case of this in a man æt. 71, who had suffered with prostatic disease for ten years, and during the past two years the catarrhus vesicæ had been very severe. The urine contained large quantities of pus, was strongly ammoniacal, horribly offensive, and caused such burning in the urethra that he had to walk about in the night for hours tightly grasping the penis to relieve his sufferings. He said in his own words—"What with the pipe being so hot, and the stench of the water, I shall go mad if you don't do something to relieve me." The usual remedies had been of no avail. Thinking that carbolic acid might possibly modify the action of the mucous membrane of the bladder, Mr. D. injected February 6, 1873, a pint of warm water containing half a drachm of carbolic acid (1 in 233) into the bladder through a double catheter. After remaining a few minutes, it was allowed to run off again. No pain was experienced at the time. Two hours after, he had great abdominal pain, with urgent desire to micturate, and the water forced itself through the urethra in such quantities that he avowed he must have passed two or three gallons in the night. The next morning he still complained of the abdominal pain which was evidently caused by distention of the bladder. Mr. D. introduced a catheter and drew off a pint and a half of clear amber-coloured urine, free from smell of any kind, with complete relief to the pain. Excessive diuresis continued for a few days. The burning pain and putrid urine have been entirely absent now for three months.

Subsequently the patient had one or two indications of a return of the symptoms and he was afraid he might soon require a repetition of the operation.

33. *Hydrate of Chloral in Traumatic Tetanus.*—Dr. VAN SOMEREN, of Madras, has recently observed some very favourable results from the use of chloral in cases of traumatic tetanus occurring in the Madras Hospital. Even when recovery did not follow the employment of the drug, the tetanic spasms were manifestly controlled. Dr. Van Someren relates four cases, of which two were cured. In the first case the tetanus supervened upon a severe burn in a boy, aged 14. The hydrate of chloral was given in the dose of eight grains at frequent intervals, and its administration was followed by decided relief of the tetanic symptoms, but eventually the patient died of pulmonary disease and diarrhœa. The second case followed an injury to the eyebrow. Trismus supervened five days after the accident, and after a purgative had been given, hydrate of chloral was administered in doses of fifteen grains every six hours. The patient rapidly improved, and, four days after the commencement of the treatment, he left the hospital. The third case was that of a child, aged 3, who was run over and sustained an injury to the toes, followed by tetanus. After the bowels had been opened by purgatives, hydrate of

chloral was given every three hours in three-grain doses. The treatment was only partially successful and the child died, but it is stated that tetanus had existed two or three days before the treatment was commenced. The fourth case was that of a man who had received an injury in the foot, fracturing four metatarsal bones. Some days after the accident tetanus supervened, and after free purging, hydrate of chloral was given in fifteen grain doses every three hours. Although the symptoms were obstinate, yet, by a continued use of the remedy the tetanic rigidity gradually diminished and finally disappeared. Dr. Van Someren thinks that a more heroic administration of the drug than that which is usually recommended would decrease the chances of a fatal issue in tetanus.—*Brit. and For. Med. Chir. Rev.*, April, 1873, from *Madras Monthly Journal*, May, 1872.

34. *Electrolysis in Surgery*.—Dr. GROH, Prof. of Clinical Surgery in the University of Olmutz, has made an important contribution to electro-surgery, in which he relates the results of his clinical experience of the effects of electrolysis. He has modified the method of application introduced by Dr. Althaus, inasmuch as he does not make exclusive use of the negative electrode, but inserts the positive likewise into the tumour. The author uses Frommhold's battery, which consists of zinc, lead, and platinum moor; and resorts to a powerful current applied for a short time under chloroform, or to a gentle current applied for days and nights consecutively. The needles which he employs are either of steel, zinc, or platinum; and he finds it advantageous, where the parts which are to be destroyed are highly vascular, to use zinc needles which are dissolved at the positive pole by the nascent chlorine, so that there is not only primary but secondary electrolysis. The eschar at the positive pole looks under these circumstances like one produced by ordinary chloride of zinc paste; viz., it is greyish white, firm, and dry. At the negative pole there is a rapid development of foam (hydrogen), which generally appears white, and more rarely brownish red, this chiefly where the tissues are very vascular. The tissues become more tense by the quantity of gas which is set free, and the epidermis or mucous membrane becomes raised; discolouration of the tissues appears at first round the needles, but afterwards at a distance, and they assume a dark brown or livid tinge. Where this is distinctly perceptible, there is generally so much destruction that the tissues do not recover themselves after the application has been discontinued. The author thinks it important to introduce the positive needle first, and the negative afterwards, inasmuch as the former becomes so firmly glued to the tissues after the current has commenced to act, that it is very difficult to push it forwards.

Groh considers the following to be the *advantages* of electrolysis. Very extensive tumours may by its aid be destroyed without the loss of a drop of blood, which is of great importance in cases where there is prostration of strength. In three of his patients, the use of electrolysis enabled him to do without resection of the lower jaw, which otherwise would have been necessary, and would have given rise to great disfigurement. In a case of cancer of the rectum, where subcutaneous injection of morphia produced only slight and temporary relief of the intense pain, and where there was a most offensive smell from the ulceration both smell and pain disappeared after the first electrolytic application. In a case of epithelioma of the lip, where the right submaxillary gland was considerably swollen, this swelling was dispersed a few days after one electrolysis. Finally, all cases progressed favourably, without any bad accidents. The pain never continued beyond the application itself; there was only slight local and general reaction; the eschars which had been formed were rapidly thrown off, there was copious granulation, and such an amount of cicatricial contraction as to cover the loss of substance caused by the removal of the growth.

The *drawbacks* of electrolysis are the following. The batteries are expensive; it is not always easy to introduce the needles so as to destroy as much as possible in the shortest time; where extensive tumours are to be destroyed the applications must be frequently repeated or prolonged for a considerable time. Groh thinks that surgeons will gradually find special indications for electrolysis as for any other operative procedures. Where the knife is the more simple in-

strument, and equally devoid of danger, they will not think of resorting to electrolysis, but will only use the latter where it either appears to offer special advantages, or where no other means can be employed.

The author has described all the cases which he has thus treated, and brought them into two classes, viz., first, where a powerful current is used for a short time; and, secondly, where a gentle current was used for a prolonged period.

1. Ten cases of nævus; all cured. Groh thinks electrolysis, from the absence of danger, and the avoidance of bleeding and disfigurement, preferable to any other operation hitherto devised for nævus. Two cases of lupus; four cases of sarcoma, cured; eighteen cases of cancer, chiefly epithelioma of the lip, thirteen cured, two improved, in two no results, one death. In these cases it is necessary to destroy not only the growth itself but also its next neighbourhood, in order to avoid subsequent infection. In some of these cases, only one, in others two or more applications were necessary. In one case there was not only ulceration of the lower lip, but also of the whole chin; the corresponding part of the lower jaw was covered with detritus; some teeth had fallen out, and those remaining were so loose that they could be extracted by the finger. Both sub-maxillary glands were engorged. Four applications were sufficient to produce destruction of the tumour, which was followed by good cicatrization.

2. Prolonged electrolysis with a feeble but perfectly constant current, such as is produced by Daniell's battery, does not necessitate the administration of chloroform, and causes hardly any pain at all. A tumour of any size may be gradually destroyed by this proceeding. The author relates three cases: one of myxosarcoma of the left leg, of the size of a child's head, in which the current was made to act from Jan. 27 to Feb. 13; suppuration supervened, and the patient was discharged cured on April 15: another case of osteo-sarcoma of the right thigh, larger than a child's head, which also yielded, although not so rapidly, as several relapses took place: and a secondary cancerous tumour of the mamma, which was quickly removed.—*London Med. Record*, March 5th, 1873.

35. *Femoral Aneurism closely simulating Malignant Disease.*—Mr. G. A. GLOAG relates (*Brit. Med. Journal*, May 24, 1873) an instructive case of this, occurring in a man æt. 37, of cachectic appearance, who came under Mr. G.'s care November 5, 1872, for a tumour which occupied the anterior and inner region of the upper half of the right thigh. "It was bounded above by Poupart's ligament, and had a circumference of 27½ inches at its centre, the circumference of the sound limb at the same part being 16 inches. The tumour had a tense elastic feel and a shiny appearance, the superficial veins were enlarged and prominent, and the disease appeared to have involved all the structures of the limb. No *bruit* or pulsation could at any time be discovered in it. It gradually increased in size, and on December 20, had attained a circumference of 30 inches. The patient suffered intense pain, which was of a paroxysmal character, and required large doses of morphia or chloral for its relief. During severe pain I found that the tumour became harder, and that it increased in circumference to the extent of half an inch, and again subsided as the pain diminished to its former dimension. The limb was cedematous below the tumour, the result of venous obstruction. Although there were no glandular enlargements nor symptoms of secondary deposit, the cachectic appearance of the patient, the intense pain he suffered, and the rapid growth of the tumour, together with the total absence of pulsation or stethoscopic sound, induced me to believe the case to be one of medullary cancer, for which operative interference was unjustifiable. About six months previously to the time when the patient came under my notice, a tumour, about the size of a small egg, appeared on the upper and inner side of the thigh, accompanied with such severe pain that the patient was unable to follow his occupation, and was obliged to remain in bed. It grew rapidly from week to week, and the pain increased in proportion."

The man died December 28, and Mr. G. gives the following account of the *post-mortem* made the next day: "An incision was made from the anterior superior spine of the ilium to the symphysis pubis, and another from the centre of Poupart's ligament down the front of the thigh. The latter was afterwards

prolonged across the inner aspect of the knee, so as to expose the upper part of the popliteal space. On making the longitudinal incision, the parts gaped widely, and a thin layer of muscular tissue was exposed. On dividing this the length of the thigh, a mass of clot presenting various shades of colour appeared. Some of it was partly laminated and of a firm consistence, and needed the assistance of the knife for its removal. Nearly fourteen pounds weight of clot was turned out of the cavity, which was bounded anteriorly and to its sides by the skin, a small amount of subcutaneous fat, and a thin layer of muscular tissue; above by Poupart's ligament; below by the quadriceps extensor tendon; and behind by the eroded femur, the abductors, and vastus externus muscles, in a partially disorganized state. The integument showed no symptoms of thinning in any part. The anterior crural nerve was found deeply imbedded in the clot, and was the only recognizable structure in the tumour. An incision was made from the middle of Poupart's ligament to the umbilicus, and thence to the sternum. The kidneys were in a healthy condition; the liver was enlarged, and showed appearances of waxy degeneration. On cutting across the aorta, and dissecting the external iliac artery downwards, it was found that an aneurism existed on the right superficial femoral artery. The femoral artery was then dissected upwards from the popliteal, as well as possible, to the tumour, and the mass removed for preservation. It consisted of a quantity of laminated fibrine, situated in Scarpa's triangle, where it appears to have burst, and this, I believe, took place before the patient applied for medical relief, at which time the tumour was localized, and about the size of two fists. The epigastric and circumflex ilii arteries were considerably enlarged. The upper part of the femoral artery leading into the tumour was pervious; that immediately below it and leading from it was impervious." . . . "This case clearly shows that cachexia, rapid growth, and severe pain must not be accepted as sufficient evidences of cancer. In reviewing the history of this case, there are some points which should have suggested its non-malignant character; namely, the absence of lymphatic enlargements, or symptoms of secondary deposit, and of any tendency to ulceration of the skin over the tumour; the favourable family history; and the fact that the tumour was definitely bounded superiorly by Poupart's ligament."

36. *Inguinal Hernia Coincident with a Ruptured Aneurism, rendering the Diagnosis difficult.*—Mr. C. F. MAUNDER relates (*Med. Times and Gaz.*, May 24, 1873) the following interesting case of this. "A male, æt. 70, the subject for many years of reducible scrotal hernia of the left side, suddenly experiences pain in the left groin and while the hernia is down. By manipulation reduction is effected, and vomiting sets in, and persists for many hours up to the moment of my seeing him. He is now pale and exhausted. The evidences of old hernia at the groin, short of the protrusion itself, are ample, and the finger finds nothing unusual in the inguinal canal. On putting the patient erect, nothing protruded, even when he coughed. Suspecting either *reductio en masse* or ruptured neck of sac and false reduction, exploration of the region was practised. Nothing explanatory of the symptoms was found, but the finger in the cavity of the belly detected a rounded swelling behind the hypogastric region, but not coming forward to the anterior abdominal wall as the distended bladder does. A catheter introduced proved that the swelling was not bladder. It then occurred to me that the tumour might be an hydatid cyst, I having, on a former occasion, tapped per rectum such a cyst, which, developed in the pelvis, caused retention of urine. On making a digital examination per rectum I failed to discover the swelling, and withheld the trocar, and, as the sequel will show, fortunately so too. The patient died, and at a post-mortem examination he was found to be the subject of a ruptured aneurism. The hernial protrusion had been reduced by taxis, and at the same moment a quantity of blood had been poured out behind the peritoneum, filling the iliac fossa and part of pelvis, and, coming forward to the anterior abdominal wall, had prevented the redescend of bowel. Strangulation had never existed."

37. *Dislocation of the Femur into the Thyroid Foramen.*—Dr. A. DIXON

WAGNER relates (*Canada Med. and Surg. Journal*, May, 1873) a case of this in a girl ten years of age, in which reduction was effected, after three trials, eight weeks after the injury occurred. The reporter believes that in time the patient will regain the entire usefulness of the limb.

38. *Intra-Capsular Fracture of the Neck of the Thigh Bone*—Dr. BIGGER presented to the Pathological Society of Dublin, Jan. 18th, 1873, a specimen of this. A gentleman fifteen months ago fell in the street, his hip coming against the curbstone. There was much bruising and œdema, and fracture was not suspected. The patient recovered, and died a few days ago from another cause. The capsule of the joint was intact. The head of the bone was detached from the lower portion of the neck, on which it freely played, a false joint having formed.

The same evening Dr. BENNETT showed a specimen, the clinical history of which was wanting. The shortening of the limb was fully one inch and a half. The great trochanter was approximated to the crest of the ilium, and the joint was fixed by the interlocking of the upper fragment with the rim of the acetabulum, which had undergone absorption. There was a bony deposit in front of the trochanter, and a spiculum of bone in the psoas tendon. The neck had altogether disappeared from the upper fragment, and nearly from the lower. The fragments were united by strong fibrous tissue.—*Brit. Med. Journ.*, March 1, 1873.

39. *Removal of a Cystic Bronchocele*.—Mr. ARTHUR E. DURHAM gives (*British Med. Journ.* March 15th, 1873) a short notice of a case in which he removed a "cystic bronchocele" from the neck of a woman thirty-six years of age, but looking much older. The tumor had first appeared five years previously, after a blow; it had grown until it had become as large as a nut, and had remained about that size for a considerable period. About a year ago it had begun to increase very rapidly, and latterly having attained the size of a large orange; it had very seriously impeded her breathing. Various methods of treatment had been tried, but without good effect, and the health and strength of the patient were quite broken down. She was much wasted and very weak, and suffered from severe dyspnoea and some difficulty in swallowing. Under these circumstances she was admitted to Guy's Hospital, and Mr. Durham determined to attempt the removal of the tumour.

A vertical incision having been made through the skin, just on the left of the median line from over the hyoid bone to over the upper border of the sternum, two catgut ligatures were applied, one to the upper and one to the lower part of the anterior jugular vein, which ran down in the middle line over the tumour, and which was very much enlarged and distended. The fasciæ and connective tissue were next divided, layer by layer, until the tumour was reached; then by aid of the finger and a blunt instrument, with a few occasional touches of the knife, the tumour was very readily turned out and removed. It was only loosely connected with the larynx and trachea, but had some firm, fibrous connections with each lobe of the thyroid body, especially with the left. On the right side its lower border rested in the bifurcation of the innominate artery. There was very little blood lost during the operation (not more than two or three drachms). The wound was closed by sutures, etc. When removed, the tumour measured ten inches and a half in circumference. It was found to consist of hypertrophied thyroid body structure, including numerous minute cystic dilatations, and almost entirely surrounding a large irregular cystic cavity, which contained about five ounces of fluid. This fluid was serous in character, deeply tinged by blood-colouring matter, and containing an immense quantity of cholesterine. The tumour appeared to be the whole isthmus of the thyroid body in a diseased condition. The right and left lobes of that body were seen, but appeared healthy.

Mr. DURHAM states (*London Med. Record*, April 9th, 1873) that the after progress of this case was most satisfactory. The day following the operation the patient was perfectly comfortable, breathing much more freely than she had done for months previously. The improvement in her complexion and gen-

eral aspect was very striking. The wound healed by primary union, scarcely a drop of pus appearing even in the situation of the sutures. Health and strength were rapidly regained, and the patient is now well.

40. *A Case of Amputation at the Hip.*—MR. BARWELL reported (*Lancet*, April 5, 1873) to the Royal Medical and Chirurgical Society the following case:—

Caroline L.—, aged seven, was admitted into Charing-cross Hospital under Mr. Barwell's care September, 1872. She had previously been under the care of Mr. Hancock with severe hip disease, and that surgeon had in the early part of 1871 excised the head of the bone, but during the operation the thigh, a mere shell of bone, had broken in two places. She went out after some months with bony union, but with open sinuses. When readmitted at the above date she was emaciated and feeble; there were several open sinuses; the liver was much enlarged. After watching the case for some time, the operation was decided on, and performed by Mr. Barwell on the 2d of November. Hardly any blood was lost; the limb was almost devoid of muscles, the bone carious and inflamed throughout. The child rallied, and after a time (corresponding with the occurrence of smart diarrhœa) the liver began to diminish in size. On the 1st of February the child went out with the liver much smaller. Certain deductions concerning the states of liver in different phases of disease were given.

Mr. Thomas Smith said he should have been inclined to refrain from operating with such a condition of liver. The decrease in the size of the liver after the operation was interesting. He had had a patient in the Children's Hospital who had both the liver and the spleen greatly enlarged, so as almost to fill the whole abdominal cavity. Whilst suppuration was going on the liver became smaller, and returned to nearly its normal size. The spleen, however, remained as large as before. It had been proposed to treat the patient with potash salts, according to the views of Dr. Dickinson of the pathology of this enlargement in suppuration, as arising from dealkalinity of the blood. This, however, was not done, but the liver spontaneously decreased. There was said to be no deposit, only the liver, not going through its nutritive changes as usual, became full of cells in various stages of growth and degeneration; and the size of the liver was due to the retention of these. He would like to ask Mr. Barwell if he has ever held the abdominal aorta when thus operating.

Mr. Barwell, in reply, said that certainly if operating on an individual with a large and well-nourished limb, he would have the abdominal aorta held. In this case the limb was emaciated and Mr. Bellamy passed in his hand under the flap, and at the same time compressed the aorta; only a little venous blood escaped, not so much as two ounces. The enlargement of the liver, Mr. Barwell thought, was due to fatty degeneration, and that need not preclude any operation. If it depended on amyloid degeneration he should not like to operate. When bones were inflamed and carious, the liver was more likely to be fatty; if largely necrosed, most commonly there was amyloid degeneration.

41. *Amputation without Preliminary Compression.*—M. NERVEU furnishes an account of the practice adopted by M. VERNEUIL of dispensing with all digital compression in amputation of the limbs. In his clinical lecture on the subject at La Pitié, M. Verneuil observes that compression of the arteries may not only be difficult from the position of the vessel, but requires an assistant of great intelligence, coolness, and of vigour if the compression is to last long. Such a one may be obtained in hospitals, but is seldom to be met with in the country, and still less often during the time of war. In some patients, too, compression is difficult or impossible; but, most important of all, its employment not infrequently induces phlebitis of the portion compressed. M. Verneuil first mentioned the subject in the article "Aïne" in the *Dictionnaire Encyclopédique*, 1871, and has up to the present time pursued the method in twenty-one operations, viz: eight amputations of the shoulder, three of the thigh, two of the arm, six of the leg, and two of the hip-joint. All these have shown that, while the method exacts intimate knowledge of the position of the

arteries, it is capable of being carried out without skilled assistance and without hemorrhage, while it prevents the occurrence of inguinal phlebitis.

In order to suppress preliminary compression in amputation we have only to apply to this operation the rules which guide us in the removal of tumours, in which, as compression cannot be employed, we tie the large vessels as they present themselves. In the flap operation, after having by the first incision divided the skin and cellular tissue, M. Verneuil proceeds to search for the artery, dividing slowly and gradually the muscles which cover it. When it has been exposed, he passes two ligatures around it, and divides it between these, in order to prevent the afflux of blood by the lower end. The large veins, which are liable to a more or less important reflux, are also tied. The ligatures accomplished, the flaps are finished, and the bone denuded, and the operation completed in the ordinary way. Another mode of procedure is also of easy execution. Having cut his first flap, he denudes the bone in front and at its sides, and, passing either a pair of curved scissors or a curved grooved director between the bone and the subjacent soft parts, he saws through the bone before occupying himself with the second flap, which he makes by small incisions from without inwards and from within outwards, tying the vessels as he proceeds.—*Med. Times and Gaz.*, April 26, 1873; from *Gazette Méd. de Paris*, March 29.

42. *Excision of the Extremity of the Humerus as a Remedial Measure in Cases of Ankylosis of the Elbow-joint resulting from Injury.*—Dr. PATRICK HERON WATSON states (*Ed. Med. Journ.* May, 1873) that in his experience the results of excision of the elbow-joint in cases of ankylosis resulting from injury, have not been so favourable as where disease has been the occasion of operative interference. "On the one hand, too great a degree of mobility in every direction has been the result; on the other, the union between the divided ends of the bones has been more complete than could be desired, and the movements have been commensurately imperfect."

Hence he was led in the summer of 1871 to operate on a boy by a new method which he conceived "would fulfil every indication, so far as the preserving muscular attachments was concerned, and at the same time enable to effect the removal of as much of the osseous textures as might appear to be necessary. The speculative reasonings which led to my adoption of this method were these:—

"It was quite obvious that, as in most cases of fracture into the elbow-joint, the humerus was the bone alone affected; no changes in the osseous structures of the radius and ulna necessarily resulted from any injury the humerus had sustained; nor even should the radius and ulna be involved in the injury, did the resulting efforts at repair constitute a condition which implied any need for their removal by operation. It was also obvious that the removal of the upper extremity of the ulna necessarily impaired the perfection of the muscular attachments, viz., of the *triceps* and the *brachialis anticus*, and indirectly the power of the *biceps* in flexing the forearm. It was clearly, therefore, very desirable that neither the radius nor ulna should be interfered with, if removal of the extremity of the humerus alone would suffice to remedy the ankylosis.

"The operation I devised for carrying out these theoretical requirements consisted in the following steps: (1) A linear incision to be made over the ulnar nerve to the inner side of the olecranon process rather longer than that usually employed in the ordinary excision of the elbow by linear excision. (2) The ulnar nerve to be turned over the inner condyle by careful dissection. (3) A probe-pointed bistoury to be introduced into the elbow-joint in front of the humerus, and then behind that bone, and carried upwards, so as to divide the upper capsular attachments in front and behind. (4) A pair of bone-forceps to be next employed to cut off the entire inner condyle and trochlea of the humerus, and then introduced in the opposite diagonal direction, so as to detach the external condyle and capitulum of the humerus from the shaft. (5) The truncated and angular end of the humerus to be cleared, turned out through the incision, and smoothed across at right angles to the line of the shaft by means of the saw, whereby (6) room might be afforded, so that partly by twist-

ing, partly by dissections, the external condyle and capitulum are removed without any division of the cutaneous tissues on the outer side of the arm.

"This operation, it will be observed, by a single linear incision upon the inner side of the arm, enables the operator to drain efficiently the entire area of operation, and through an incision of very moderate limits to remove the entire expanded extremity of the humerus, without interfering with any muscular structures, except those of the forearm, which take origin from the osseous tissues actually excised. The result in this instance was perfectly satisfactory, the movements of the forearm being restored so as to maintain a degree of muscular power not usually observed in cases of ordinary excision of the elbow."

Dr. W. has since practised this mode of operation five times (six in all), and he states that "with a single exception a satisfactory result accrued immediately from this operation. In this single case when an attack of osteomyelitis supervened upon the operation, and osseous union was threatened between the humerus and bones of the forearm, the secondary removal of a further slice of the humerus afforded an ultimately satisfactory issue.

"The merits of this operation, which, so far as my observation and reading go is an original one, consist—(1) In leaving the attachments of the *triceps* and *brachialis* undisturbed, affording therefore a degree of leverage in the movements of the forearm, which cannot be attained when the olecranon, or any portion of the upper end of the ulna, is interfered with or removed. (2) In limiting the area of operation almost exclusively to within the capsular ligament of the elbow-joint, which seems to secure more speedy healing of the wound than would otherwise occur. (3) In securing, by the line of incision being internal and posterior, less ultimate surface deformity, a more direct drain for discharge, and a more ready access to the ulnar nerve than by any other method.

"One objection only can be taken to this mode of procedure, viz., that it does not afford a ready access to the external lateral ligament of the elbow-joint; this, however, is of trivial importance, if the plan of procedure I have laid down be rigorously carried out in the division and removal of the end of the humerus, viz., 1. The oblique division of the condyles of the humerus from above downwards, so as to cut through the articular surface by means of bone-pliers between the trochlea and capitulum of the humerus. 2. To cut off the capitulum and external condyle obliquely from the shaft by means of pliers applied from below upwards. 3. To turn out the end of the shaft and cut off as much of its truncated and conical extremity as may be deemed requisite; and, lastly, to dissect and twist away the capitulum and external condyle from their remaining ligamentous and other attachments.

"It may be urged, that while this may be easy enough when there is only partial rigidity of the elbow-joint, it is impossible to effect it in cases of complete and absolute ankylosis of the elbow-joint. But such an objector must not fail to recollect, that absolute ankylosis of the osseous kind is not a common result of fracture into the articulation, especially when passive motion has been attempted to be kept up after the accident; that in most of these cases it is rather due to the altered form of the osseous surfaces resulting from the fracture and displacement, and that at most the ankylosis is usually fibrous in its character.

"Again, even were it present, forcible flexion and extension under chloroform will, in the great majority of cases, effect such a degree of solution of continuity as will enable the operation to be carried out in the manner already described without any real difficulty. Should any case occur of very dense osseous union of the articular surfaces, rendering the risk of fracture of the olecranon or of the shaft of the humerus, a reasonable danger possibly involved in such strenuous effort, then a transverse section of the humerus with bone-pliers through the condyles, excision of a portion of bone above this level, and piecemeal excision of the ankylosed condyles themselves, by means of the forceps and gouge, would afford an alternative means calculated to remove any ordinary difficulties; while the conversion of the operation into a complete excision of the elbow-joint may always be had recourse to should insuperable obstacles be found to prevent the execution of the more limited resection."

43. *Excision of Elbow-joint.*—Dr. J. BELL exhibited to the Med. Chir. Soc. of Edinburgh, a little girl upon whom he had performed this operation. The joint had almost perfect flexion and extension, and there might be seen on each side a fair condyle and a fair olecranon, notwithstanding no periosteum had been left.—*Edin. Med. Journal*, May, 1873.

44. *Advantages of Circumcision from a Surgical Point of View.*—Dr. CADELL read a paper on this subject before the Med. Chir. Soc. Edinburgh. He considered it in four aspects: 1. In infancy. 2. In boyhood. 3. In adult life. 4. In old age. He described:—

1. The local and constitutional disturbance which may be set up by a long prepuce in infancy, and showed how these might be immediately relieved by circumcision. He read notes of a case, and also referred to those of Mr. Bryant, illustrating the effects of an adherent prepuce on the urinary organs, and the relief obtained by circumcision.

2. In boyhood, he believed that a long prepuce, by imprisoning the secretion from the glans, might be an exciting cause of masturbation; and if there was an hereditary disposition to nervous affections, epilepsy and insanity might be thereby induced.

3. In adult life, circumcision would facilitate cleanliness, diminish the secretion from the glans, so that the great cause of non-venereal excoriation would be removed, and thus render the mucous surface less susceptible to the venereal poison.

4. In old age, he cited Mr. Hey's opinion, that a congenital phimosis was an exciting cause of cancer in the penis.

In conclusion, Dr. Cadell remarked that he would strongly recommend circumcision in boys between infancy and puberty, whenever a congenital phimosis caused them the slightest inconvenience.

Prof. LISTER said the cases alluded to by Dr. Cadell, of irritation caused by adherent prepuce, must be admitted to be of great interest. They knew that where adhesion existed there was often an accumulation of secretion, and they could understand that to be a cause of irritation. He should like to have it clearly brought out how far the symptoms in these cases were attributable to that cause, as distinguished from mere length of the prepuce. Though all would allow that cases of phimosis ought to be subjected to operation, it ought to be considered whether circumcision was the best that could be done. The object could be obtained without mutilation. Mr. Jordan, of Birmingham, had written an interesting paper on the subject, showing that a perfectly natural condition of things might be obtained by the simple means of notching the ring of skin to the requisite extent, and then dividing the mucous membrane up to the *corona glandis*, and, avoiding all use of stitches, simply have the part drawn backwards and forwards twice every day. As regarded the question of malignant disease, he might have been unfortunate, but he had now seen a large number of cases of cancer of the penis, not one of which was associated with phimosis.

Dr. J. BELL said his experience in regard to circumcision was in cases of long standing and perfectly incurable nocturnal enuresis by small children who were in the habit of wetting the bed. In as many as four or five cases he had succeeded in effecting a perfect cure, by simply removing the redundant portion of the prepuce. In one case, a very bad case, a poor little fellow made his water first in the prepuce, which was like an orange at the end, and then he got rid of the water by squeezing it with his hand, the water coming out by a small aperture. That case was in George Watson's Hospital, and it became a question with the managers how to provide the necessary bedding for the boy. The operation performed was very simple, and was a complete cure. He (Dr. Bell) had very little experience of adherent prepuce; cases of adhesion of the prepuce were not so common as those of long prepuce.

Dr. HALLIDAY DOUGLAS said, that several years ago he was waited upon by a gentleman who had been married a few days before, and who had failed to effect connection. He was labouring under a very tight phimosis. He had never experienced any inconvenience during his life of twenty-five or twenty-

eight years. He (Dr. Douglas) transferred him to Mr. Syme's hands, and within twelve months there were twins born to him. Another curious fact in this gentleman's history was this: In early life his brother had been relieved of phimosis, and three of his children, nephews of the first gentleman, had required to have the operation performed.

Dr. WATSON was glad that the conclusion to which Dr. Cadell had arrived was, that where an elongated prepuce was a source of annoyance, it was right to relieve the person by removing it. As regarded the question of the comparative frequency of venereal complaints among persons who had been circumcised and those who had not, he might refer Dr. Cadell to a paper which appeared in the *Medical Times and Gazette*, 1st Dec. 1855, by Mr. J. Hutchinson, in which it was shown that at the Metropolitan Free Hospital, situated in the Jews' quarter, in London, in the year 1854, the proportion of Jews to Christians among the out-patients was as *one to three*—at the same time, the proportion of cases of syphilis in the former to the latter was only as *one to fifteen*. Yet, that this was not the result of any higher degree of morality on the part of the Jewish population was obvious, because fully one-half of the cases of gonorrhœa occurred in Jews. This preventive influence of circumcision, as regards chancreous infection, led to hereditary syphilis being rarer among the children of Jews than of Christians. . . . He was surprised that Dr. Cadell did not quote that greatest of all authorities on such matters, viz., Dr. Ricord, who had said, in one of his published clinical lectures: "The prepuce is an appendix to the genital organs, the object of which I could never divine; instead of being of use, it leads to a great deal of inconvenience, and the Jews have acted kindly in circumcising their children, as it renders them free from one at least of the ills to which flesh is heir. The prepuce is, in fact, a superfluous piece of skin and mucous membrane which serves no other purpose than as a reservoir for the collection of filth, especially when individuals are inattentive to cleanliness." This was very strongly confirmatory of Dr. Cadell's views, though it appeared to Dr. Watson a little extreme.—*Edin. Med. Journal*, Feb. 1873.

45. *Nocturnal Incontinence of Urine cured by Circumcision*.—Dr. JOSEPH BELL communicated to the Med. Chir. Soc. of Edinburgh, a case of nocturnal incontinence of urine which had persisted for seven years, in which he had performed circumcision a month previously, since which the incontinence had entirely ceased.—*Edin. Med. Journal*, May, 1873.

OPHTHALMOLOGY.

46. *Operations for Cataract*.—A very interesting and prolonged discussion on this subject took place recently in the Surgical Society (Paris), which is fully reported in Nos. 15, 17, 18, 20, 21, and 22 (April 11, to May 30, 1873) of the *Gazette Hebdomadaire de Méd. et de Chirurgie*. We regret that we have not now space at command to give a full analysis of this debate, and must, therefore, be content with merely briefly indicating the views of the prominent speakers.

MM. PANAS, GIRAUD-TEULON, and PERIN, gave fully the history of the different methods of extraction, pointing out the advantages and disadvantages of each, and while admitting the force of some of the objections to Graefe's they gave it the preference as affording the largest proportion of favourable results; though some were inclined to advocate certain modifications in the extent and position of the corneal incision.

M. LEFORT, on the contrary, greatly preferred the method of Daviel, but he considered it better to make the corneal incision with Graefe's knife than with that of Beer or Wenzel. M. DOLBEAU also regarded Daviel's operation as incomparably superior to Graefe's, and he denounced iridectomy.

M. GIRAUD-TEULON stated that he would not discuss the operation of discision, as he regarded it as only applicable to certain cases, nor that of couching, because its consequent dangers have been so fully demonstrated by long experience.

The sole advocate for couching was M. DESPRES (of Saint Quentin), who sent a communication to the society on the subject. He attributes the ill success of this method to the crystalline remaining as a foreign body, and to the rupture of the zonula Zinnii during the operation, and advocates a new method of performing couching which he practises. This he states consists in rupturing the capsule without injuring the zonula Zinnii, then reclining the lens in the aqueous humour behind the iris, where he asserts it does not act as a foreign body, and is, after a time, absorbed. How he accomplishes this feat does not seem to us very apparent. Besides it is well known that in discision, when a *large* fragment of the lens is left in the aqueous humour, especially if in contact with the iris, it is very apt to induce, like a foreign body, iritis, closure of the pupil, etc., and it is hard to believe that the presence of the whole lens would not lead to equally unfavourable results. In fact we can scarcely conceive of any method of operating for cataract more likely than this to lead to disastrous results, unless, perhaps, it be the pushing down the lens through the vitreous to the very bottom of the globe, thus breaking down the hyaloid membrane and leaving the lens as a foreign body to sooner or later excite inflammation and disorganization of the retina and internal tissues of the eye.

47. *Section of the Orbicularis Muscle and Integuments at the Outer Canthus, as a Prelude to Extraction of Cataract.*—Mr. E. CHESHIRE, Senior Surgeon to the Birmingham and Midland Eye Hospital, states (*Brit. Med. Journal*, April 5, 1873), that he has derived much advantage from this proceeding, which he has now resorted to in five cases.

"The advantages," he says, "attending division of the orbicular muscle at the outer canthus, before making the corneal section, are, more extensive exposure of the globe, which enables the operator to manipulate his instruments, and to make his section through the cornea with greater ease. And the spasmodic contraction of the orbicular muscle being overcome, the operator is left to complete his operation at his leisure; while all risk of sudden protrusion of the lens, followed as it sometimes is by prolapse of the iris and escape of the vitreous, is almost entirely avoided; and the contraction of the lids on the globe, which is sometimes a troublesome symptom in the after-treatment of cataract-extraction, is prevented.

"With division of the orbicular muscle, the wire speculum, which greatly facilitates each step of the operation, may be used without injury or annoyance to the patient. No sutures are required, as the divided surfaces readily unite, and scarcely leave a trace behind them. All that is necessary to be done is to keep the eyelids nicely in apposition for a few days after the operation by means of strips of court-plaster. All bandages and other coverings after extraction are to my mind objectionable, as it is important to have the fullest opportunity for examining the appearance of the lids without disturbing the patient by the removal of external appliances. Moreover, the support afforded by the lids to the corneal flap, when nicely kept in position by strips of court-plaster, is very agreeable to the patient. Spasm may be brought on, and the partially healed corneal flap may be opened by the removal of bandages, wool, etc., which may have become adherent to the lids.

"The operation is done as follows. A wire speculum is placed between the lids, to enable the operator to make his section through the muscle and integument at the external canthus with precision and ease. I have made no allusion to the mode of extracting, as the plan I propose is equally applicable to all extractions. Suffice it to say, that I always use Graefe's knife; and that Graefe's or Liebreich's operations are selected, as may appear most suitable to the particular case. I never use chloroform or ether in extraction, as the sickness which frequently follows their administration far outweighs any advantage that may otherwise result from the use of anæsthetics during the operation; and

with the orbicular section, the globe being more under control, they are still less required. Where great neatness is desired, the section may be made subcutaneously."

48. *Atropized Castor Oil as an application in some Corneal Affections.*—Mr. D. C. L. OWEN, Surgeon to the Eye Hospital, Birmingham, states (*Brit. Med. Journ.* May 10th, 1873) that in the treatment of irritable ulcer of the cornea, and of abrasions of the epithelium, it is generally desirable to use some application of a viscid nature, which may fill up the inequality of surface and reduce the irritation caused by the movements of the eyelid to a minimum. For this purpose no remedy is so fit as castor oil; and if to the oil be added the sulphate of atropia in the proportion of from one to four grains to the ounce (to which extent at least it is soluble), a convenient agent is obtained, which combines the beneficial effect of atropia with the mechanical advantages of oil.

In these especial instances, castor oil is to be preferred as a vehicle before either gelatine or glycerine, since it is not, like glycerine, painful when applied to the surface of the eye, nor, like both, readily washed away by the tears.

49. *Sympathetic Ophthalmia—Recovery.*—Mr. HENRY POWER relates (*Royal London Ophthal. Hosp. Rep.*, Feb. 1873) a very interesting case of this in a delicate youth *æt.* 17, and attributes the unusually fortunate result to the pupil being kept widely dilated from an early period, and to the free use of powerful tonics during the more active period of the disease. Whenever the atropia was intentionally or accidentally omitted, even for a day, so that the iris played over the capsule of the lens, an exacerbation of all the symptoms was sure to occur, a tag of adhesion was formed, pain was experienced, and the redness and watering of the eyes augmented. This was noticed over and over again. If the lymph of which such tags of adhesion be really composed of white corpuscles, we might imagine the course of events to be that, owing to paralysis (reflex) of the vasomotor nerves of the vessels of the iris of the sympathetically affected eye, these are congested and dilated, and in fact in the same state as those of the conjunctiva and sclera. So long as the pupil is widely dilated, they are rendered tortuous, and a certain amount of pressure is exerted upon them, but when the pupil contracts, these vessels become straight, and their delicate walls rub against the capsule of the lens, the friction causing or facilitating the escape of the white corpuscles, which constitute the adhesion, and thus the play of the iris is interfered with at one point. The nerves are here consequently dragged upon, pain with the reflex manifestations of intolerance of light, increased lachrymation and redness of all the vessels supplying the eye are induced, which again leads to fresh exudation, and thus the disease has a tendency to perpetuate itself.

The beneficial action of tonics, such as iron, strychnia, and quinia, is readily explicable on this view: the first constricting the walls of the smaller arteries, and thus diminishing the supply of blood to the part; the second strengthening and giving tone to the nervous system, while the third, as Binz and others have shown, materially influences the activity of movement and the escape of the white corpuscles of the blood.

50. *Operation for Strabismus.*—Dr. SNELLEN latterly has adopted the following method of operating for strabismus: The conjunctiva is freely divided in a direction parallel to and directly over the muscle: thus in convergent strabismus the incision would extend from the edge of the cornea towards the caruncle. Wounds in the conjunctiva parallel to the margin of the cornea are inclined to gape, especially when the eye is turned in the opposite direction; wounds vertical to the margin of the cornea are, on the contrary, inclined to close when the eye is rotated in the opposite direction. If necessary, a suture can be applied without any fear of diminishing the effect of the operation. The operator next holds with forceps first one lip and then the other of the wound, and separates with blunt-pointed scissors the conjunctiva to an equal extent above and below. The caruncle is then held and treated in the same way. The closed forceps are placed between the edges of the wound on the middle of the

muscle, opened, then gently pressed down and closed, thus inevitably seizing the muscle, into which a small aperture is now made close to the sclera. Two exactly equal incisions can now be made by inserting one blade of the scissors through the opening and the other between the muscle and the conjunctiva.

The advantages assigned are the following:—

1. The operation is easier. There is no risk of wounding the sclera (hence sharp-pointed scissors may be used so as to separate the attachment nearer to the globe). There is no danger of dividing Tenon's capsule too far in any direction.

2. The operation is less painful.

3. Extravasation of blood under the conjunctiva is prevented.

4. When desired, the capsule can be divided to a greater extent on one side so as to alter the action of the muscle.

A somewhat similar operation is proposed by Dr. Snellen for paralysis of the ocular muscles. "The conjunctival wound is in the direction of a meridian (from before backwards). The muscle is divided in the usual way, but a little further back than in tenotomy, so that a small piece of it remains attached to the sclera. Two sutures are now applied in the following way: through the upper edge of the wound in the conjunctiva, through the remnant of the tendon on the sclerótica, through the muscle drawn forwards, and again through the same edge of the wound in the conjunctiva. The second suture is inserted at the lower side exactly in the same way and parallel to the first. Both are now separately drawn tight and knotted. So made, they cannot possibly become loose too early. As the knots are on the outer side of the conjunctiva, the threads can be easily removed at any later period. The risk of inflammation may be lessened by separately uniting the conjunctival wound. It is not always necessary to divide the antagonist."—*Royal London Ophthalm. Hosp. Rep.*, Feb. 1873.

51. *Dermic Grafting in Ophthalmic Surgery.*—Dr. WECKER describes a plan of grafting which he terms dermic and which he performs as follows: He pinches up a small fold of the skin of the arm, or of the forearm, between his thumb and index finger, and transfixes the base of it with a small bistoury. The piece of skin is seized with forceps and cut off at the base with a pair of curved scissors. He thus obtains small grafts which, when retracted, measure from 6 to 8 mm. (.24"—.32") in different directions. These grafts are then applied to the wound and spread out carefully by means of a blunt probe. It is intended that the wound should be covered as completely as possible with a serrated mosaic of these pieces. The wounds of the lids or in their neighbourhood measure commonly only about 3—4 cent. (1.2"—1.6"), and require about 10 or 20 pieces to cover them. A piece of gummed goldbeater's skin is then placed over the wound, and this allows of a constant inspection of the condition of the grafts. A bandage is applied over the eyes to insure absolute immobility. The dressing is not changed for twenty-four hours. The change which occurs in the colour of the grafts indicates in a few days whether the result will be successful or not. Those pieces which adhere have a rosy colour at the end of 36 or 48 hours, gradually becoming red; whilst those which have not taken keep their palish-yellow tint, become encircled with a brownish-black ring, and finally mummify. It is remarkable that even beneath the mummified grafts when they become detached, it is found that cicatrization has been completely established. In reality it is then discovered that only the epidermis has shrivelled up, and that the derma has become grafted. If any fail, however, it is an easy matter to fill up the gaps left in the mosaic. By this means suppuration is prevented, which is injurious to the other grafts. He does not hesitate to assert that covering a wound in a state of granulation "at the edges of which cicatrization is commencing, or, at least, is about to commence" (Reverdin), with this kind of mosaic will at once check suppuration. The indications for the employment of grafting appear, at present, to be the following. 1. Grafting ought always to be employed in cases of burn of the eyelids or neighbouring parts which give rise to suppurating wounds, and by faulty cicatrization of which deformity or displacement of the eyelids would be caused. 2. It can

be very advantageously employed, in cases of partial or complete ectropion of the eyelids in consequence of cicatricial contraction in their neighbourhood (burns, caries, fractures, etc.). 3. Dermic grafting may, with advantage, take the place of almost all, if not all, blepharoplastic operations. 4. Grafting ought to be employed in all cases in which the eyelids have undergone a considerable loss of substance in consequence of an accident or an after operation, and a suppurating wound remains.—*Royal London Ophth. Hosp. Rep.*, Feb. 1873, from *Annales d'Oculistique*, July–August, 1872.

52. *Visible Pulsation of the Retinal Vessels*.—OTTO BECKER has examined the eyes of patients suffering from heart disease with the ophthalmoscope, and found that in cases of insufficiency of the aortic valves, spontaneous pulsation of the arteries on the disc and of the retina was almost always present. After making these observations, he had his attention called to a communication from H. Quincke on the same subject in the *Berliner Klin. Woch.*, 1868, No. 34, and 1870, No. 21. These communications seem to have escaped the notice of ophthalmologists. He speaks of arterial, venous, and capillary pulsation in insufficiency of the aortic valves, the capillary pulsation being characterized by alternating pallor and redness of the disk when seen in the erect image. He only met with pulsation in marked cases of aortic disease, and did not always meet with it at each observation of the same case. Becker finds it in all cases and at all times. Sometimes, however, it is necessary to excite the circulation by letting the patient walk about or by giving a stimulant. At first he was unable to assure himself of the capillary pulsation, but latterly he had been able to do so. The filling of the trunks of the arteries and the emptying of the veins on the disk are synchronous with the cardiac systole. The arterial pulsation could also be seen in branches at a distance from the disk equal to three or four of its own diameters. He recommends that the observer's attention be directed to the light streak seen on the arteries. He will find that this increases in breadth, and, also, at the same time, the darker streaks on either side of it increase in breadth. The artery also increases in length, as may be seen by watching a curve. The pulsation can be seen best, and sometimes only, just before a large trunk gives off branches at a considerable angle. All these points are described in detail.

Notes of seventeen cases are given: the conclusion derived from them is that simple aortic insufficiency with or without hypertrophy of the left ventricle produces spontaneous pulsation of the arteries of the disk and of the retina. There was one exception. The patient was very anæmic, the radial pulse was small and soft. The anæmic condition probably accounted for the absence of retinal pulsation. In one case in which aortic insufficiency was diagnosed and no pulse was noticeable, the autopsy showed that no aortic insufficiency was present. In one case pulsation was noticed in the left eye, but was only discovered after close examination in the right. The diagnosis was of aneurism of the left carotid, chiefly, and of the innominate and arch of the aorta in a less degree. The feeble pulsation detected in the right eye was probably due to slight aortic insufficiency produced by the neighbouring aneurism.—*Royal London Ophth. Hosp. Rep.*, Feb. 1873, from *Græfe's Archiv*. 18 Bd.

MIDWIFERY AND GYNÆCOLOGY.

53. *Injection of Perchloride of Iron in Post-partum Hemorrhage*.—A most interesting debate on the treatment of post-partum hemorrhage recently took place at the London Obstetrical Society, in which the merits and demerits of this treatment were fully discussed. Dr. W. S. PLAYFAIR states (*The Obstetrical Journal*, May, 1873) that a few days after this debate he had a case in which he employed it, and firmly believes he saved by it the life of his patient; "yet very grave and even alarming symptoms followed, due, it

can hardly be doubted, to its employment." Referring to the journal just named for the minute details of the case, we may state that "when the iron was injected, although the hand was in the uterus, and the clots within it had been as much as possible removed, blood was still pouring out abundantly. The powerful astringent at once corrugated all the blood and coagula it came in contact with, and these hardened clots filled up the uterus and the canal of the vagina. In due course these began to decompose, and septic absorption took place. By the finger and the intra-uterine injection they were gradually broken down and removed. The improvement unquestionably dated from the expulsion of the two large and decomposing coagula on the sixth and seventh days after delivery. Immediately after this happened, the temperature and pulse fell remarkably, and recovery commenced and continued uninterruptedly.

"What then is the lesson to be learnt from this case? Is it that the risk is too great, and that the injection of the perchloride of iron should be banished from practice? I think most unquestionably not. I have little doubt, knowing what I did of the patient's former labour, and having already tried in vain all the anti-hemorrhagic treatment at our command, that without the perchloride the flooding would have proved fatal. It is indeed precisely in these inveterate cases, where every means of inducing uterine contraction proves unavailing, that it forms so invaluable a resource. Rather, I think, it should teach us to limit its use to these only—as, I believe, Dr. Barnes has all along taught. It shows also that the retention in utero of hardened coagula, liable to decomposition, may prove a source of danger hitherto unsuspected. With a knowledge of this fact it would be our duty to secure the expulsion of the coagula as soon as possible after all risk of hemorrhage had ceased, and make sure that there was a free exit for the discharge.

"This would best be done by satisfying ourselves on the second or third day after delivery that the vagina is not filled with clots, and removing them if present, and by using antiseptic intra-uterine injections freely, as in the above case, should suspicious symptoms arise. With a knowledge of this source of danger, it might probably be avoided in most cases."

54. *Urgent and Prolonged Dyspnoea coming on suddenly after Labor.*—Dr. J. J. PHILLIPS, Ass. Obstet. Phys. to Guy's Hospital, relates (*Brit. Med. Journ.*, May 3, 1873) the following interesting case of this in a married lady, æt. 36, to whom he was called Dec. 30th. She had been delivered of her fifth child at 2 P.M., after a perfectly natural labour, and continued to do well until 6 P.M., when she complained of oppression and began to gasp for breath. Dr. P. saw her at 9 P.M., when her condition was most alarming. She was sitting up in bed, supported by pillows; the dyspnoea was most urgent; respirations 48, pulse at wrist 140; "respiratory murmur could be heard over the chest in front and behind; there was no abnormal sound accompanying the heart's action, but the first sound was muffled; the legs and the forearms were quite cold; the lips were livid; the face was pallid. She endeavoured on one or two occasions to speak, but could only articulate one word at a time. The history of the case and the symptoms seemed to point unmistakably to a coagulum in the pulmonary artery; and it seemed to us that the treatment should be directed to support the heart's action as much as possible, and this was done by repeated doses of brandy, which with some difficulty were swallowed in soda-water. Five-grain doses, increased to ten grains, of carbonate of ammonia were given at short intervals, and warmth was applied to the extremities. I remained about an hour. The case seemed hopeless. At nine o'clock next morning, however, I found her much relieved. She was able to assume more nearly the horizontal posture; the extremities were warm; the breathing was much more easy, and only thirty per minute; the pulse still very small, 120 per minute; temperature in the axilla, 97° Fahr. Symptoms of improvement had commenced about four in the morning. Her husband and another medical man who sat up during the night, believing that the carbonate of ammonia was doing good, had continued its use in increased doses, so that in twelve hours she had taken two hundred and ten grains of it. The stomach tolerated this large quantity in a remarkable manner. 'She was a little sick two or three times.' The brandy

had also been continued, and she had taken a little beef-tea in the early morning. In the evening, she was in much the same condition as in the morning; frequency of pulse and respiration the same; temperature only half a degree higher (97.5° Fahr.). She still complained of pain in her chest. During the night some hours of sleep were obtained, and the next day she was more comfortable in every respect. The respirations had fallen to from twenty to twenty-five per minute; temperature, 99° Fahr.; no abnormal cardiac sound. The strictest rest was maintained. On the sixth day there were some pyrexial symptoms; and on the seventh she began to suffer from severe sickness." She however soon improved.

Dr. P. thinks that it is impossible to explain the symptoms in this case upon any other hypothesis than that of pulmonary embolism. He thinks it "probable that a loose clot which had formed in the right side of the heart was driven into the pulmonary artery, giving rise to the urgent dyspnoea which supervened so suddenly. The patient told me that throughout the day she had felt a little shortness of breath. Given that a clot found its way into the pulmonary artery, it is of course quite conjectural what changes took place in it; but it is not improbable that a loose clot might undergo such contractions as to allow the gradual re-establishment of the circulation, coincident with the slow improvement in the general symptoms. Different opinions will doubtless be entertained as to the share which the carbonate of ammonia had in relieving the symptoms, by reducing the hyperinosis of the blood which existed at the time. The large quantity of this alkali which was taken in twelve hours is specially deserving of notice. I am not aware that it has been given continuously for twelve hours in such large doses at such short intervals. Dr. Richardson, in one of his valuable contributions to the subject of thrombosis, gives reasons for administering the liquid ammonia rather than the carbonate; but when this case occurred I had not read Dr. Richardson's remarks on this point. Another fact of interest in the case now reported, is the low temperature which continued throughout the day succeeding the most severe symptoms.

55. *Convulsive Diseases of Women.*—Dr. ROBERT BARNES, in his admirable Lumleian Lectures recently delivered, sums up in the following propositions the principal points relating to the convulsive diseases of women:—

1. Pregnancy and labour require for their due fulfilment an extraordinary supply of nerve-force.

2. This extraordinary supply of nerve-force implies a corresponding organic development of the spinal cord.

3. The provision of an extraordinary supply of nerve-force implies a greatly augmented irritability of the nervous centres, rendering them more susceptible to emotional and peripheral impressions.

4. The disturbances in nutrition occasioned by pregnancy almost always entail some alteration of the blood, which increases the irritability of the nervous centres, and favours the evocation of any latent convulsive or other nervous diathesis, as chorea, epilepsy, or vomiting.

5. When the blood-change wrought by pregnancy is marked by albuminuria, a poisonous action of peculiar intensity is exerted upon the nervous centres tending to produce eclampsia.

6. Obstinate vomiting in pregnancy probably sometimes proves fatal by the development of an unknown organic systemic morbid process.

7. Menstruation resembles pregnancy in giving rise to an exalted central nervous erethism, and ovulation is a primary exciting cause of epileptic, vomitive, and hysterical convulsions.

8. At the climacteric age, again, there is renewed susceptibility to convulsive disease.

9. Pregnancy, by evoking or producing convulsive diseases, under certain known and passing conditions, puts to the test the various theories of the pathogeny of these diseases.

10. The rational treatment of convulsive diseases in women must take into account the two great factors in the production of these diseases—namely

exalted nervous irritability under the stimulus of the reproductive function, and lowered or poisoned conditions of the blood.—*Lancet*, May 3, 1873.

56. *Excessive Vomiting of Pregnancy*.—Dr. McCLINTOCK read a communication on this subject before the Obstetrical Society of Dublin, March 12th, 1873. He included under the above designation, all cases where this symptom of the gravid state is so severe and persistent as to threaten the life of the patient. He advocated a resort to the induction of abortion in all these cases, if medical treatment had been found unavailing, and the life of the patient was endangered. A highly illustrative case was related, where the author recently had recourse to induction, apparently under hopeless circumstances, and saved the patient from inevitable destruction. He took a brief clinical retrospect of the subject, and a table was given of thirty-six cases where abortion had been artificially provoked to rescue the patients from the fatal effects of their excessive vomiting. In twenty-seven of these cases the vomiting was arrested, and the patients perfectly recovered; whilst in *nine* instances, although the vomiting was stopped, still, ultimate recovery did not take place, partly in consequence of the operation having been too long delayed, and partly from the effect of some intercurrent complication (*e. g.*, diarrhoea, hemorrhage, puerperal fever, biliary calculus, etc.), not fairly attributable to the operation itself. The author cited fifty cases (from various authentic sources) where death had actually taken place in consequence of the persistence and uncontrollable severity of the sickness. With reference to the etiology of this vomiting, he briefly alluded to each of the theories that had been put forward by different authors to account for its production, and showed their inapplicability to the great majority of cases; and he completely refuted the notion (so strongly advocated by Dr. Grailly Hewitt), that some displacement of the gravid uterus was the cause of the vomiting in every instance. He was at pains to distinguish between the vomiting that occurred in pregnancy (from some concurrent disease), and the true vomiting of pregnancy. Whilst enforcing extreme caution in the former class of cases, before any recourse be had to artificial abortion, he still thought that this alternative measure might be justifiable in some cases of this description, and referred to instances in his table in support of the opinion. He concluded his essay with a detailed clinical history of a case in which he had recently induced abortion. It was the lady's first pregnancy, and the sickness began about five or six weeks after impregnation. She was reduced to the very last degree of prostration and weakness when abortion was provoked, insomuch that the preservation of her life seemed scarcely possible; nevertheless she made a good recovery, and has again become pregnant.

Dr. LOMBE ATTHILL considered the vomiting of pregnancy to be generally a useful, not an abnormal symptom; and thought that, in some cases at least, it was due to distension of the os internum, instancing the occasional production of nausea on the passage of an uterine sound, and by the passage through the os internum of clots in dysmenorrhoea, as examples of vomiting occasioned by such a cause. In cases of excessive vomiting, abortion, he believed, ought to be adopted, when the patient is sinking.

Dr. CHURCHILL, also, did not believe in the flexion theory as the cause of the vomiting in pregnancy. A retroverted pregnant uterus was not of common occurrence. He thought that various conditions (granular inflammation, etc.) of the cervix uteri, cervical canal, or os internum, might be a cause of the sickness; and he remarked that he had seen typical cases of morning sickness in women who were not pregnant. He, Dr. Churchill, had seen seven cases of extreme vomiting, five of which were fatal. The early suffering in these cases was generally that of exhaustion; but, sometimes, there was inexplicable agony. The great difficulty in these dangerous cases, is to arrive satisfactorily at a determination of the time at which the operation should be performed. The best guide was the condition of the pulse. In all the bad cases he had seen, the pulse became very high; and when the pulse rises, the question of operation should be at once taken into consideration and not postponed too long, because, if the patient be allowed to run down, she will not rally.

Dr. J. A. BYRNE had only seen one fatal case from excessive vomiting in

pregnancy. The patient was a delicate woman, four and a half months pregnant. He did not think the symptom depended upon alterations in position of the uterus, as he had seen instances of pregnancy in cases of retroflexion of the uterus without any vomiting; and in these cases of excessive vomiting during pregnancy, the uterus was generally found in its normal position. He, Dr. Byrne, thought that the symptom in question was due to the stretching of the fibres of the uterus, and that the Chairman's explanation would not apply. Change of air was of benefit in the treatment of these cases, as was also the oxalate of cerium, and the hypodermic injection of morphia; but we should be extremely circumspect about recommending the operation of the induction of abortion. 1st. Because it was a line of practice which might be adopted too generally; and 2d. Because of the speedy manner in which these cases, sometimes, suddenly recovered.—*Irish Hospital Gaz.*, May 1, 1873.

57. *Dysmenorrhœa cured by Abroma agustum (Olutkombol).*—B. B. MOHUN SIRCAR, L.M.S., relates (*Indian Med. Gaz.*, April 1, 1873) three cases of dysmenorrhœa successfully treated by the *Abroma agustum*. The roots, he says, are the officinal part of the plant; they are covered with thick, fleshy, easily separable bark, rich with a viscid white fluid which contains the active principles of the plant. Mr. S. politely offers to supply a packet of the drug for trial to any of his professional brethren.

The first case was a lady, æt. 23, who had suffered from dysmenorrhœa for the last eight years. Each catamenia was accompanied with severe pain, continuing for three or four days. The discharge was scanty and dark-coloured. She had a child when 15 years of age. She took the first dose of olutkombol early in September last, and continued it for seven days successively, from the first day of the appearance of the menses. The pain became much less than on previous occasions. On the menses appearing the next month, though not attended with pain, she took the medicine as before; she subsequently became pregnant.

—, aged 16, suffered from painful menstruation from the beginning of her puberty. Born of wealthy parents, she had the advantage of various sorts of treatment, but none proved efficacious. In the month of August, 1868, fresh roots of the olutkombol, in half drachm doses, were administered for seven days during the period of the menses. No catamenia appeared; the next month she became *enceinte*, and in due time gave birth to a healthy child. Since then her menses are quite normal.

—, aged 26, mother of two children. In her 20th year, her menses became irregular and painful. She suffered in this way for nearly four years. In 1868 she took olutkombol, got rid of her pains, and conceived; but she aborted on the sixth month. The menses were again painful, and olutkombol was re-administered in 1870. She again conceived, and is now the mother of a boy nearly two years old.

58. *Extra-Uterine Fœtation.*—Several very interesting communications on this subject were made to the Obstetrical Society of London at its meeting on the 7th of May last.

Mr. WM. ROSS JORDAN related a case of this in which gastrotomy was successfully performed. The subject of it was a patient in the Birmingham Hospital for Women, æt. 29. In April last she had inflammation of the bowels, which threatened her life. In July or August she first felt the child, and in September she expected and prepared for her confinement. From this time she gradually became smaller in size for six weeks, when she fancied she was in labour, being in great pain for three or four days. After that she had frequent shivers and a cold sensation in the abdomen. On December 13, a swelling in the abdomen, not larger than in ordinary pregnancy at six months, was discovered fluctuating a little towards the left side, and on deeper examination a round mass like the placenta between the umbilicus and pubes, and a harder projection to the upper and left border of the tumour. The cervix uteri was pushed up to the right side. The sound, penetrating three inches and a half, pointed to the right groin, and moved the round body felt in the

abdominal examination. The recto-vaginal pouch was occupied by a hard, rounded mass. On December 21, a puncture with the aspirator was decided upon, and a quantity of chocolate-coloured fluid mixed with white flakes was drawn off. Mr. Ross Jordan, from his examination on this occasion, came to the conclusion that the case was one of extra-uterine foetation. Two hours after complete collapse came on, and hemorrhage into the cyst or abdomen was suspected. Five hours after the use of the aspirator an incision four inches long was made in the abdominal wall down to the peritoneum, when the cyst with the placenta under it presented. A clot of blood having been removed, the cyst, with a foot near the external opening, was drawn forward, but the wall of the cyst being thin it ruptured, and through this opening the foetus was extracted. The placenta was left undisturbed, and the openings of the cyst and the abdominal wall were brought together by sutures of carbolized catgut, leaving an open wound about two inches and a half long, which was covered with a layer of tenax, etc. The patient progressed favourably, and on January 1 and 2, large fragments of placenta were discharged, and on April 10. she came to the Hospital looking well, with the wound quite closed.

Mr. JOHN SCOTT related another case in which the result was not so fortunate. The patient, æt. 32, was admitted into the Hospital for Women complaining of pain in the right inguinal region. The uterus was found developed as in early pregnancy. This was April 17. On May 15, a tumour could be distinctly felt above the pubes. June 5: The os could scarcely be reached, and the tumour felt more elastic. August 7: A feeling was communicated to the finger as if of fluid between it and the uterus; the foetal heart could be heard. January 6: The tumour extended two inches above the umbilicus, and felt per vaginam like the tense bag of membranes. No foetal heart could be heard, and a hard body like the uterus was felt in front of the abdominal tumour. January 15: The sound passed four inches, its point being felt in the body just mentioned. On the 29th sudden and violent pains in the epigastrium came on, with restlessness, faintness, and sickness. The cyst was punctured by the aspirator, but no fluid could be withdrawn. On the 30th, in consequence of threatening symptoms, it was decided to make a free incision through the abdominal walls, when what appeared to be the enlarged uterus presented itself, but on extending the incision upwards it proved to be an expansion of the uterine tissues. This was cut through, and on passing the hand into the cyst the foetus was found lying with its head in the upper part. It was removed, the cavity sponged out, and the placenta left untouched. The upper part of the incision was closed by sutures, and the lower left open, the whole being dressed with carbolized oil. The patient died thirty-one hours after the operation. The author gave a minute report of the cyst and its appendages made by Dr. SNOW BECK.

Dr. ALFRED MEADOWS related a case of *supposed* extra-uterine foetation, in which gastrotomy was performed mainly with the view of showing the difficulty of diagnosing abdominal tumours. The patient, æt. 58, was admitted to the Hospital for Women, and had passed through the climacteric period nine years ago. She had great pain in the abdomen, which was enlarged by the presence of a tumour. Sixteen years since she fancied herself pregnant, and in due time had pains like those she had felt in her first confinement; these, however, gradually declined, and no child was born, and since that time she had considered herself to be carrying a dead child. On admission, the abdomen was found to be occupied by a large tumour about the size of the uterus at term, tender to the touch, and apparently solid. The uterus was high up, and its cervix very small. The sound passed upwards and forwards two and a half inches. The balance of opinion among the author's colleagues being that this was a case of extra-uterine gestation, it was determined to clear up all doubts upon the matter by making an exploratory incision five inches in length between the pubis and umbilicus. A white friable mass was then discovered, having all the characters of malignant disease. It broke down readily, and two ounces of a thick brownish fluid escaped. Finding it impossible to remove the mass, the abdominal wound was closed. Fifty-three hours after the operation the patient died, and upon opening the abdomen the mass of malignant disease was found

to be the omentum, which overlapped the tumour, and was about an inch in thickness. The tumour itself, which was adherent in every direction, proved to be a large fibro-cystic tumour of the uterus. Even with the aid of an exploratory incision, a correct diagnosis of the character of the tumour had not been arrived at previous to death.

Mr. LAWSON TAIT thought that the importance had been overlooked in this case of the absence of retro-uterine fullness, or rather the absence of a solid tumour there. It would be almost impossible, he said, to imagine a case of extra-uterine foetation without a retro-uterine tumour, giving to the finger a feeling of cystic *ballotement* previous to the absorption of the amniotic fluid, but after that feeling solid. In his own case, where the history had led him astray, he had not made it sufficiently clear that menstruation had ceased for eight months and then was resumed.

Mr. SPENCER WELLS said he had only seen one case of extra-uterine foetation. It was remarkable as being a twin pregnancy—an intra-uterine and an extra-uterine foetus going on together up to the full time of pregnancy, and the intra-uterine foetus being delivered in the usual manner. He had seen several supposed cases of extra-uterine pregnancy, but in nearly all the source of fallacy was extreme thinness of the uterus and of the abdominal walls. He had not found irregularity or suppression of menstruation at all uncommon during the progress of ovarian disease; nor was it rare for disease of both ovaries to go on while menstruation continued with perfect regularity. In two cases after removal of both ovaries, menstruation (or a periodical sanguineous discharge from the uterus) had returned at several successive months.

Mr. LAWSON TAIT in a note on the *diagnosis of extra-uterine pregnancy*, said that in these cases very little confidence should be placed in the statements of patients if they were not in harmony with physical signs. He had, in consequence of the history of her case given by a patient, been led to make an erroneous diagnosis, mistaking a multilocular ovarian tumour for a case of extra-uterine foetation. There were two circumstances which invariably accompanied extra-uterine gestation which has gone past the period: The first was due to the general excitement and congestion of the organs involved, especially to the enlargement of the uterus; and the second to the absorption of the liquor amnii after the death of the child. The conditions with which extra-uterine pregnancy may be confused before the death of the child were displacement of the normally pregnant uterus during the early months, pregnancy complicated with fibro-myoma or cystic disease of the uterus, and more rarely pregnancy of one half of a double uterus. After the death of the child diagnosis was more difficult. The two points in the history already mentioned were most important; auscultatory signs were of no use. The other conditions with which it might be confused were pelvic hæmatocele, ovarian tumours, especially dermoid cysts, cancer, fibro-cystic disease of the uterus, hydatids of the uterus, and phantom pregnancy. The uterus in extra-uterine pregnancy was always intimately associated with a tumour, and generally in front of it, movable to a limited extent, and enlarged. The most important point was that the cervix is always patulous. Under such circumstances, if a foetal heart were audible, the case was clear. If the case were seen after the death of the child the tumour would be soft, and, besides obscure *ballotement*, possibly a part of the child might be made out by internal or external examination. Of the three cases which the author had seen, two had been first pregnancies, and in neither had there been any troublesome pain. In the third there was great pain, but the patient was seen during the false labour.

59. *Syphilitic Disease of the Placenta*.—Dr. ERNEST FRÄNKEL, in an elaborate article illustrated by several plates, gives the history of over twenty cases of syphilitic placenta. After referring to different authorities upon the subject, he summarizes his observations in the following conclusions: 1. the placenta may become affected by syphilis, and there are certain characteristic indications of this. 2. The syphilitic placenta occurs only in hereditary or congenital syphilis in the foetus. 3. The seat of the disease varies according as the mother remains healthy, and the syphilitic virus is communicated directly

from the father to the ovum by means of the semen; or according as the mother is diseased. In the former case the affected fœtal villi of the placenta degenerate through proliferation of cellular granulations, with consecutive obliteration and atrophy of the vessels, complicated frequently by marked proliferation and thickening of the epithelial covering of the villi. 4. In the latter case, when the mother is syphilitic, the three following conditions may occur: *a.* The mother, through the act of impregnation, is simultaneously affected with syphilis with the fœtus; diffused syphilis of the placental villi may then develop itself, though primary infection of the maternal parts—endometritis placentaris—is not excluded. *b.* The mother becomes infected before, or shortly after, conception. The placenta may remain normal or become diseased under the form of endometritis placentaris gummosa, or, according to Virchow, in a more limited sense—endometritis decidualis. *c.* The mother becomes infected only during the latter months of pregnancy (seventh to tenth month). It then generally happens that, in case the father was healthy at the time of impregnation, the fœtus, as well as the placenta, is exempt from the above-described alterations. 5. The infection of the fœtus on passing through the maternal passages is rare, and not yet proved conclusively.—*Med. Times and Gaz.*, May 10, 1873, from *Archiv für Gynækol.*, Bd. v., April, 1873.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

60. *Antagonism between Opium and Belladonna.*—Dr. JOHNSON, during his residence in China, has had great experience of opium-poisoning and the ill effects of opium-eating. During the last seven years he has treated upwards of three hundred cases of opium-poisoning. He first employed atropia in 1869. He employs it hypodermically in the severer cases, where the patient is profoundly comatose. In milder cases, emetics, the stomach pump, cold douche, and constant exercise are generally sufficient. It is in the worst cases that atropia displays its wonderful effects; for instance, where the pupils are firmly contracted to a pin's point and immovable, the conjunctiva and the cornea insensible to touch; the face pale; the lips, eyelids, and nails livid; the pulse weak and irregular; the breathing slow and stertorous; the extremities cold. In such cases, he usually injects hypodermically half a grain of atropia. Within ten or twenty minutes the pupils begin slowly to dilate; and, after an hour or more, the face becomes flushed; the breathing soft, without stertor; and the pulse stronger. Within two hours the full effects of the drug (atropia) are manifest, "viz., widely dilated pupils, flushed face, hot skin, tranquil, slow breathing, diminished frequency and increased strength of pulse, followed by calm and tranquil sleep, from which the patient is easily wakened after three or four hours." If within two hours the first dose fail to dilate the pupils, flush the face, and render the breathing slow, steady, and tranquil, he repeats the injection. In cases where the coma is not profound, he first employs a quarter of a grain of atropia, repeating the dose if the first be insufficient. He says, "I have observed very sudden and very unfavourable changes set in rapidly, even in the mildest cases of opium-poisoning. This has happened so frequently, that I have come to the conclusion that whenever there is contraction of the pupil and great drowsiness, after the evacuation of the contents of the stomach, it is always advisable to administer a small dose of atropia. I may remark, that in no instance have I seen any bad effects following the subcutaneous injection of atropia."—*London Med. Record*, April 9, 1873, from *Hospital Reports*, Shanghai, March, 1872.

61. *Carbolic Acid a Cerebro-Spinal Poison.*—Dr. D. J. HAMILTON states (*Brit. Med. Journ.* March 1, 1873), that since carbolic acid has been so extensively used, instances of poisoning by it have become more common, and several examples of it have come under his observation. He relates the following case:—

S. R., female, æt. 4½, had an operation performed on the arm, requiring an incision through the skin about four inches long. The wound was covered with lint soaked in pure carbolic acid—actual contact, however, being prevented. In an hour after the operation I was called to see the patient, as the nurse thought that she was suffering from the effects of the chloroform. I found, on examination, that the conjunctivæ were almost quite insensible; the skin was cold and clammy, and the face of a slightly livid colour. The pulse was slow and depressed. Thinking that very probably the chloroform might have something to do with the production of these symptoms, I resorted to the ordinary restorative measures; but, notwithstanding this, the patient was evidently becoming more comatose. The dressings were now removed, and it was found that a large quantity of carbolic acid had melted and run down into the wound. The wound was now washed with water and rectified spirit, and artificial respiration was commenced and steadily kept up. The natural respiration at this time occurred at intervals of about half a minute. Injections of brandy were administered, and hot fomentations were wrapped round the patient. In three hours after this, the respirations ceased entirely when artificial aid was not employed. The pulse at the wrist had disappeared, and the face became more livid. At the same time, the coma was complete. Half an hour afterwards, the child died.

Dr. T. BOND confirms (*Med. Times and Gazette*, March 8, 1873) this statement, as to the poisonous effects of carbolic acid, and says that three fatal cases have occurred within a month; one at St. George's Hospital, another at the Birmingham General Hospital, and another at one of the largest London hospitals.

62. *Quicksilver given to Procure Abortion, followed by Mercurial Tremors.*—Sir G. DUNCAN GIBB reports (*Lancet*, March 8, 1873) the case of a young woman, upon whom, when about three months pregnant, an attempt had been made by her seducer to produce abortion by the administration of two teaspoonfuls and a half of quicksilver. No effect was produced upon the uterus, but in the course of a few days she commenced to shake on the right side of the body, her gait became unsteady, and she stumbled frequently in walking. When seen by Sir Duncan Gibb, she was six months pregnant. The above symptoms were still present, and she could not grasp firmly with the right hand. In a fortnight the shaking had extended to the other side of the body, and the left hand grasped feebly like the right. In the course of the next two months all the symptoms gradually became less, and were scarcely noticeable when she was confined.

There was not any salivation throughout, nor was there any blue mark on the gums as in lead-poisoning; they appeared natural. She must have swallowed four ounces and a half of quicksilver.

The above case was remarkable in that the muscles of one side of the body only were first affected by the tremors, instead of the upper extremities, and then they extended to the opposite side of the body.

63. *On Marsh's Test for Arsenic.*—H. HAGER (*Pharm. Centralhalle*, xii. 157) proposes to employ a Marsh's apparatus charged with solution of potash, instead of dilute acid, as a means of detecting arsenic in tartar-emeti. In such an alkaline solution there is no formation of antimoniuiretted hydrogen, but reduction of metallic antimony. Until all the antimony has been reduced to the metallic state, there is no production of arseniuretted hydrogen; but when this reduction is complete, then there begins to be formed arseniuretted hydrogen, the presence of which may be readily ascertained.

Dr DRAPER also proposes a slight modification of Marsh's test in order to admit of the convenient weighing of the deposited arsenic (*American Chemist*, June, 1872). A bundle of fine platinum-wire is introduced into the exit-tube, and afterwards heated, whilst the arseniuretted hydrogen is passing through it, when the arsenic is absorbed by the platinum, and may be weighed along with it.—*London Med. Record*, April 2, 1873.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Bilateral Dislocation of the Fourth Cervical Vertebra forwards; Death in twenty-five and a half hours; Post-mortem Examination; Account read and Specimen exhibited at the Scott County (Iowa) Medical Society, in Davenport, December 5, 1872. By R. J. FARQUHARSON, M.D.

At 9 A.M., Nov. 19th, a heavy, muscular man fell backwards down a flight of ten steps, striking his head against a box, which was standing a few feet from the foot of the stairs; when found he was doubled up against the side of the box, with his feet resting on the lower step.

At 7 P.M., when seen by Dr. Middleton, it was difficult to make out his symptoms, owing to his partial intoxication; however, it was ascertained that he had not passed urine since the accident; he was conscious and rational, spoke of his friends, of how much money he had, etc. He was sitting up in a chair, supported by two or three women; he complained of great tenderness from pressure in one spot at the back of the neck, but no irregularity in the ridge of spinous processes could be felt. He also complained of a sense of impending suffocation when his head was raised up, though it was done at his urgent request; this movement, if carried too far, caused him to cry out from excessive pain; he said he had no feeling in his hands, arms, legs, or feet.

November 24th, 10 A.M., was first seen by the reporter, when his condition was as follows:—

Decubitus dorsal, with head on a small pillow, and face turned slightly to one side; pillow wet with fluids, vomited or spit out; perfectly conscious, and answered questions in an audible voice, somewhat influenced by his rapid breathing; face pale and covered with large drops of warm perspiration; skin of body and extremities also warm and moist; respiration 44, and sighing, being entirely diaphragmatic; chest fixed; pulse 144, full and soft, with no perceptible weakness; no priapism; drew off about thirty fluidounces of high-coloured urine, a few drops of blood with the first part, the remainder clear. Just as the urine ceased to flow, his face changed and his breathing stopped suddenly, the pulse continuing for some seconds and then ceased; a few spasms of the grinding muscles of the lower jaw took place as it dropped. Soon after death the face, which had been pale, became suffused and lived.

Sectio cadaveris, twenty-nine hours after death.—Rigidity marked; fine muscular development, weight about 170 pounds; bright fluid blood coming freely from the nostrils; spinal column in the cervical region only examined; examination made with great difficulty, owing to the fact of the body being in a coffin and in a small dark outhouse. Upon cutting through the skin and fascia, at the back of the neck, and coming down into the muscles, there was found at the left side a collection of dark fluid blood, and upon examination with the finger, an opening in the yellow ligament was found, through which the finger *easily* passed, and the edges of the laminae (in which no fracture was detected) could be felt, and also the spinal cord with

the dura mater unbroken. The space between the laminæ of the fourth and fifth vertebræ readily admitted the finger, and must have been at least an inch in width.

Upon removing the cervical vertebræ (except the atlas), the dislocation was found to have been reduced by the force of the removal, but the unnatural mobility, at the junction of the fourth and fifth vertebræ, the rupture of the ligamenta sub-flava on each side, together with the rupture of the ligaments of the oblique articulations, all plainly showed the site of the lesion. Just at the lower part of the front of the body of the fourth vertebra, the anterior common ligament was detached and raised into a fold, which extended across the body.

Congenital Fracture of Clavicle. By A. B. De Luna, M.D., of New York.

Mrs. B—, æt. 32, in good health, and in the ninth month of pregnancy, fell down stairs bruising one of her legs, and striking the abdomen against a wooden tub she was carrying at the time. On reaching her room immediately after the fall, she complained of pain on one side of the abdomen, though not very severe; faintness, and strong movements of the child in utero. These sensations, however, gradually disappeared on assuming the recumbent position for a few hours, and she reached her full term, which was two weeks after this, without further trouble, being then delivered, after a short natural labour, of a male infant apparently healthy, according to the mother's testimony.

A few days after her confinement on dressing the child, she noticed something on his neck which she described as "a lump," and to which she called the attention of the midwife who had attended at her labour. This person, however, could not account for it, and as the child was quiet and seemed to suffer no pain, no more was thought about it for the time being. When a little over two weeks old, icterus became developed; the little one began to waste away rapidly, and as he lost flesh, the deformity about the neck became more and more apparent.

After a few days, during which no improvement had taken place in his condition, I was called to see the child. He was now about four weeks old; the skin was resuming its normal appearance, but he was greatly emaciated, and seemed very small, even making allowance for his wasted condition. On uncovering him, the first thing that attracted my attention was the deformity about the neck, which on examination proved to be a fracture of the clavicle near the acromial extremity, united by bony callus with considerable overlapping, and which, according to all appearances, must have occurred in utero at the time of the mother's fall, six weeks before. The other bones were intact, and seemed well developed, though very small.

Diffused False Traumatic Aneurism of Popliteal Artery; Ligature of Femoral; Recovery. Reported by GEORGE N. MONETTE, M.D., Visiting Physician to Charity Hospital, New Orleans, La.

J. R., æt. 25 years, was admitted to hospital on September 23d, with pistol-shot wound of each thigh, received on 8th instant. One entered inner side of right thigh, two inches below the inferior margin of Scarpa's triangle, ranging transversely and superficially beneath the integument, lodging on opposite and external border, embracing a diameter of four inches. There was a sudden hemorrhage, which was soon checked. No

other complication existed; the ball was excised same day; wound healed kindly.

The ball entering left leg, $3\frac{1}{2}$ inches above patella, ranged through posteriorly and on inner side of femur, severing one of the branches of the popliteal. Upon admission, he complained of some pain, the ball wounds were cicatrized firmly; a slight tremor was perceptible midway between two wounds. I ordered perfect immobility of limb, with cold water dressing for five days. He walked about the hospital during my absence, which broke up the adhesions, causing a different false aneurism. A distinct aneurismal thrill was felt on third day between the entrance and exit ball wounds. The femoral artery was compressed by the patients under my direction, until he could endure it no longer. The tourniquet was substituted, but with like want of success. Flexion upon the thigh was next resorted to, which compressed the tumour, diminished the size, and effected an almost perfect cure. He felt well enough to go home, walked several squares, when the aneurism reappeared. Seven days after leaving the hospital, he came under the care of Dr. W. After consultation, ligature of femoral was decided upon, which was done at inferior angle of Scarpa's triangle. The wound healed by first intention, absorption took place readily, and the aneurism disappeared. Ligature of femoral was only necessitated by his imprudence, otherwise the aneurism would have been cured by flexion.

285 Magazine St.

Chlorate of Potassa in Bowel Complaints.—ALFRED S. GATES, M.D., of Franklin Parish, St. Mary's, La., in a communication to us, extols the efficacy of chlorate of potassa in diarrhœa, especially that occurring as a sequela of measles. He writes: "My own child, æt. 18 months, after an attack of measles, suffered from dysentery; passages occurring every hour or two, which persisted for a month without any relief from the accepted remedies. In my extremity I mentioned the case to a medical friend, who advised me to use the chlorate of potassa in gr. iv doses every two hours; accordingly I prescribed: R. Potass. chlor. gr. xxxij, syr. simp. ʒss, aq. pur. ʒss, and gave as directed. After the third dose the character of the discharges was completely changed, the blood and mucus disappeared, and the child made a rapid recovery.

"Measles being epidemic, I saw several other cases with identical symptoms following desquamation. In every case the sufferers were relieved by the remedy. Meeting with success, I determined to give it a fair trial in cases which West, in his "Diseases of Children," calls inflammatory diarrhœa. It fully and completely realized my expectations. I have also used it in the dysentery of adults, though with no such decided success as in the above-mentioned cases; though I have reason to suppose that in two cases, in which my faith was shaken, the directions were not followed with any attempt at regularity."

A Case of Amputation of the Leg without Hemorrhage, by reason of Thrombosis. By E. P. SALE, M.D., of Aberdeen, Miss.

The reading of Dr. Liddell's paper upon "Thrombosis of Bloodvessels of the Lower Extremities" (see No. of this Journal for Jan. 1873) recalled to mind the case of David S., æt. 20, who was standing on a log, cutting, when the axe, which weighed five pounds, glanced on a bush and struck his foot just posterior to the tarso-metatarsal articulation, severing the foot al-

most entirely. He was seen by a neighbouring physician who found the hemorrhage very profuse, and which was not controlled entirely until after a period of eight hours, the amount of blood lost could not be accurately ascertained. I saw him twenty hours after the receipt of injury, he was then suffering much from shock and consequences of hemorrhage, evidenced by the hippocratic countenance, coldness of cutaneous surface, vomiting, and being pulseless; his condition was almost one of exsanguination; there was then no hemorrhage of consequence. Amputation was determined upon, but owing to his extreme anæmia, and for other reasons unnecessary to mention, it was postponed for a week, after which period, the portion of foot anterior to the wound was found to be gangrenous. The leg was amputated by Dr. Lowe just above the ankle, by the circular method; *no hemorrhage followed the operation*, and after watching the stump for several hours it was found unnecessary to apply even a single ligature; the patient reacted well and progressed, we are told by his friends, without an unfavourable symptom to complete recovery.

What agent rendered the operation bloodless? I cannot account for it, except by *thrombosis* of the anterior tibial, posterior tibial, and peroneal arteries and their recurrent branches; the state superinduced by anæmia which rendered the blood hyperinotic, as in formation of heart clot after a profuse *post-partum* hemorrhage.

DOMESTIC SUMMARY.

Quinia as a Parturient.—Dr. WM. L. LINCOLN, in his report on Obstetrics, made to the Minnesota State Medical Society, states that he confidently believes that quinia is a “valuable agent when dilatation has taken place, and the pains are not strong; we are sure that we have observed labour materially shortened by the administration of five grains of quiniæ sulph. And again, when the pains are irregular in regard to duration and interval, we have observed, in half an hour after the exhibition of the dose of quinia, regular pains as to strength and interval. One or two marked cases have come under our own observation, which bear upon the subject matter under consideration.

On the tenth day of June last we saw a lady who supposed herself to be in the fifth month of pregnancy, who had been flowing more or less all the time for three weeks, and had been taking remedies to prevent miscarriage, but who for the preceding twenty-four hours had been having occasional labour pains. An examination revealed a dilating os, but the pains were very irregular, sometimes occurring every four minutes for three or four pains and then there would be an interval of twelve minutes or more.

After watching the progress of labour for an hour, she got six grains of quinia, and in about half an hour we had the extreme satisfaction of observing that the pains were regular and strong until labour was completed, which occupied about an hour and a quarter. The doctrine has been advanced that if it is so certain a parturient it would be unsafe to administer quinia to pregnant women as a remedy in malarial fevers, for at any time the uterus might be stimulated to take on expulsive contractions. So far as we have noticed, no writer on the subject of malarial fever, gives a word of caution on the subject in days gone by, and we suppose that pregnant women have swallowed their portion of the potent drug in question; and if such are the facts, the question arises, why did not the whole malarial region of our land become depopulated in a generation, from miscarriage?

In the month of September two cases presented themselves for a test in this matter, and although the number is too small to be of much moment, yet they

seemed to be fair cases for trial. Mrs. W. was the subject of quotidian fever, and desired to have it broken up at once, as she expected to be in labour "any day." She said she was a hard subject to cure of ague, having succeeded in shaking every day, for five weeks, at one time in Illinois some four years previous. She took thirty grains of quinia sulph., in the twelve hours preceding the time for her next chill, and had no subsequent chill or fever. Her confinement was thirteen days later.

A few days subsequent, Mrs. B., reckoning that she was within two weeks at furthest of confinement, being ill of a tertian ague, took twenty grains of quinia in the twelve hours preceding her anticipated chill, breaking the fever just three weeks previous to her accouchement.

We offer these cases not to support a theory, but as simple facts to show that in those cases it proved safe to prescribe quinia in potent doses to pregnant women.—*Trans. Minn. State Med. Soc.*, 1873.

Paracentesis Thoracis.—Dr. BOWDITCH, of Boston, in a very interesting letter to Dr. Allbutt, of Leeds, England, published in *The Practitioner* for April, 1873, gives the following as some of the general conclusions to which his experience of this operation has led him.

"*First.*—I always operate *first* with a very small exploring trocar and canula, which latter can be attached to a suction pump. This is the general rule, and has not been departed from for years, owing perhaps to the fact that physicians in Boston and its vicinity rarely allow pus to remain so long as to 'point'—we operate long before that period arrives. I thrust the trocar in *fearlessly and quickly*, so as to avoid carrying the pleural false membrane before the canula instead of transfixing it. I choose a point in the back on a line with the angle of the scapula and between the eighth and ninth or ninth and tenth ribs, and at least an inch and a half above a horizontal line drawn through the lowest point at which the respiratory murmur is heard in the other lung. I draw fluid slowly, but as continuously as possible, as long as I can do so, or until severe pain or stricture over the chest, or any serious discomfort of any kind, comes on. Coughing does not always induce me to desist; but a severe harassing cough checks further operation. After the operation I advise entire rest for twenty-four hours at least. I have not been obliged to use opiates except once or twice, to check an *extravagant* cough; I should never check a mild one, as it is usually the healthful result of expansion of the lung.

"*Second.*—No amount or character or complication of disease, either cephalic, thoracic, or abdominal, prevents me from operating when I find a large effusion, or any effusion that I think is adding distress to a patient already very ill. In some such cases I operate simply to give relief, and I do so as freely as I would use a subcutaneous injection of morphia, prescribe a blister, or a cathartic. I had one case, in a very aged man who had had manifest cardiac disease, but who, at the time I was called to him, had been unable to lie down for two or three weeks, with general dropsy; the legs, abdomen, and the left pleura being all distended. Tapping the chest and drawing away over two quarts of serum relieved all the severe symptoms, and he lived for years afterwards. I therefore now *hope* for *more* than simple relief, even in the worst cases, and in those in which the prognosis would undoubtedly be for a fatal result unless relief can be obtained by the operation.

"*Third.*—Age and sex, and even the existence of pregnancy, I deem of no importance when considering the question of thoracentesis in a severe case. The youngest babe and the octogenarian, the strongest and fattest of men, with chest parietes so thick that my usual trocar (1½ inches long) failed to reach the interior of the chest, and the thinnest, most emaciated of women, have all alike been operated on. In a pregnant woman I tapped four times before and five times after delivery, and finally made a permanent opening: she lived many years afterwards in comparative comfort. In the case of my fat patient, I had simply to get a new and longer trocar, and success followed.

"My only criteria for judging as to the propriety of operating in any cases are the questions—

"Is the dyspnœa severe enough?

"Has it occurred, even once, so severely that in the eyes of attendants it has seemed to threaten life even momentarily?"

"Or, finally, has sufficient time elapsed for remedies to have effect without such effect being produced?"

"But, *fourth*, on this question of time, I fear I may not be able to satisfy either myself or you. I will, however, make one broad statement, viz., whenever I hear that a temporary orthopnoea has occurred, or that a severe dyspnoea is actually present, I never think of waiting, but *operate instantly*, however serious and complicated all the other signs may be. But if a patient has been ill only a few days or a week; if the effusion be small, the dyspnoea but slight; if remedies seem to be having a beneficial effect, I have hitherto, and I presume I may hereafter, let the fluid remain three or four weeks, perhaps, before *urging* an operation. My past experience has been in this direction, although perhaps I have erred in not doing as you suggest in the article already cited, viz., in not operating immediately after finding fluid effused even to a moderate amount. My reason does not give me valid grounds for delay, and certainly my experience of the effects of the operation suggests nothing but that pleasant results would follow it whenever performed. I think, therefore, we *may* operate in any case where the quantity of fluid is obviously so large as to seriously obstruct the greater part of a lung, as, for example, when the level of the fluid seems to rise to the middle of the back, and in so doing oppresses the respiratory murmur in the entire organ. But in such a case, if it did not cause serious symptoms, I might defer to the patient's wishes for a time, and delay the operation a few weeks.

"*Fifth*.—The character of the fluid, though it has at times influenced my prognosis, has never completely foiled me in the use of the exploring canula. Provided the operator steadily draws and does not interrupt the course of the fluid, coagulation can hardly take place in the minute instrument. Pus as thick as honey, and which required a little time to come to a level in the receiving basin, I have drawn through it. It is true, however, that on a few occasions (usually when first introducing the canula) I have been unable to draw out what I subsequently found to be serum. I have tried sometimes the throwing in (by reversing the operations of the pump) of a half-ounce, or less, of lukewarm water. This sometimes has removed the lymph (I presume) that obstructed the end of the canula, and the subsequent attempts to draw fluid have been successful. If, however, the obstruction has still continued, the withdrawal of the instrument becomes necessary, and the reintroduction in the intercostal space just above the previous point of puncture has always succeeded.

"*Sixth*.—Any '*valvular opening*' of the parietes, when using the trocar or in the common surgical operation, seems to me, in the light of my experience, worse than useless—absolutely bad. It is wholly uncalled for with the '*aspirator*' canula; and when an incision is made, it is impossible, in subsequent daily dressings of the wound and washings out of the pleura, to prevent the admission of air. It does harm by its liability to form a sinuous fistulous opening in the chest whereby the ribs may become eroded. Moreover, the *free* exit of pus is prevented by it, and phthisis is more likely to set in.

"*Seventh*.—When and how ought a permanent opening to be made? A decision on this point is often very difficult. Let me name a few favouring circumstances.

"(a) Youth is much more favourable than advanced life.

"(b) The length of time the disease has lasted, if short, is favourable, because it leads us to hope for an easy and early expansion of the compressed lung. If *many* months have elapsed since the disease began, we can have rather less hope. But mere length of time, however long, should not prevent us from making it, provided the operation seems called for by urgent symptoms.

"(c) Uncomplicated pleuritic effusion is, of course, more favourable than when the patient suffers also from other diseases.

"Hence I incline to make a permanent opening in a young or middle-aged generally healthy subject, one who has been ill but a short time. Moreover

he must have been operated on at least once with the "aspirator," and pus must have been drawn. Moreover, this pus must show a tendency to reaccumulate rapidly. In such a case, and with serious symptoms supervening on the return of the effusion, a permanent opening may be made, I think, with a good hope of success, provided the subsequent treatment be also wise.

"On the contrary, a person above middle life, who has been long ill and afflicted with cough and other symptoms of phthisis, is one in whose case, until very lately, I should have preferred repeated tapplings with the 'aspirator,' for I have feared the risk of hectic fever setting in under the influence of the constant drain of a long flow of pus. I frankly confess to a grave suspicion whether I have not erred in some of these cases; for certainly, though few have eventually *wholly* recovered, yet their lives have been lengthened and made more tolerable by the operation.

"But there is a class of intermediate cases between these two extremities, which at times bitterly tests a man's powers of exact differential diagnosis or prognosis. All that can be said is, that each case must be minutely and accurately examined, and the question of making a permanent opening decided only after a searching analysis of all the circumstances connected with it. While serous fluid is drawn by the 'aspirator,' *I think* we should not be justified in making a permanent opening with the absolute certainty that pus will soon be formed. Upon this question, however, we need facts.

"Blood, unless it be in the chest from an external injury, and needing a surgical operation for its removal, should always contra-indicate a permanent opening; for, in my experience, a bloody fluid at the *first tapping* has always indicated serious, and generally malignant disease of the lung or pleura, and therefore a permanent opening seems contra-indicated.

"*Eighth.*—How shall a permanent opening be made? Formerly I used silver tubes. At times I have used those of gum elastic. One patient contrived for himself a spiral silver-plated wire tube. This he found easier than either of the others. The silver tubes are painful. Those of gum elastic have, at times, broken off into the pleural cavity. I know of one case, under the care of a professional associate, in which this accident caused great suffering. Moreover, all such tubes, of whatever substance made, are liable to become clogged. Very evil results also may follow, unless great care be taken. For example, although there may seem to be a daily free discharge of pus, a quantity of it may accumulate *below* the point at which the tube enters the chest, and there become semi-solid and fetid. The possible consequences of this state of things, as actually occurred in one of my own patients, are hectic fever and many of the symptoms of phthisis. In the case alluded to they continued to increase until I began thoroughly to wash out the cavity with warm water, and the removal was made by this means of a large quantity of very fetid pus. Relief to all unfavourable signs immediately supervened, with ultimate recovery of the patient. When, therefore, hereafter I shall have made up my mind that a permanent opening is needed to prevent the constant reaccumulation of pus, my reason, and the small but very satisfactory result in two cases in which that operation has been done by free incision through an intercostal space, will induce me to advise that proceeding rather than the use of any tube or trocar, however large. That incision I should generally advise should be made low in the back instead of in front as advised formerly in books of surgery. The dissection should be made carefully down to the pleura, and the cavity laid open to the extent of at least two inches, perhaps more, provided the free exit of pus can be made more thorough. I shall make no effort to keep out the air by valvular openings, because I know I cannot prevent it from entering, and because I believe it will do no harm—certainly much less harm than any contrivance which, while trying to exclude air, prevents the free passage of all fluids out. I shall have that aperture kept freely open by lint until the cavity has fully healed from the interior, if that be possible. I shall use, from the second or third day, simple warm water or carbolyzed water injections into the pleura; and I shall let all fluids drain into a large poultice, or mass of cotton wadding, placed on the chest."

Two Nævi cured by Monsel's Solution applied externally.—Dr. GEIGER, of St. Joseph's, Mo., reports (*Am. Practitioner*, April, 1873) the case of a male child, aged nine months, who had at birth a "mother's mark" on his perineum and over the pit of his stomach. They were at first flat but slightly elevated spots, and quite small. When the patient was about six months old, however, the tumours took on a very rapid growth; that on the perineum occupying not only the entire perineum, but a portion of the scrotum also, while that on the abdomen was an inch in diameter. The perineal nævus was kept constantly irritated by the child's diaper, his urine, and his feces, and on more than one occasion bled considerably. The mother positively refused her consent to any other procedure than one which consisted in some external application. Dr. G. determined, therefore, to try the methodical use of Monsel's solution to both the growths. Making a mixture of equal parts of the liq. ferri persulph. and glycerine, he painted not only the nævi themselves thoroughly with this, but applied it also for some lines beyond to the healthy skin, and directed it to be repeated twice daily. In a week both tumours had diminished appreciably in size; and in less than one month from the date of the first application of the iron they had disappeared altogether.

Abscess of the Larynx in young Children.—Dr. JOHN S. PARRY describes (*Phila. Med. Times*, June 14th, 1873) two interesting cases of this rare disease, which came under his notice in his wards in the Philadelphia Hospital.

CASE I. John L., æt. 4½ months, negro, well nourished, wet-nursed by his mother, who is healthy. The mother called his attention to the child, who had been irritable and cross she said for two or three days. He had not nursed well, though she did not observe any difficulty in swallowing. During the preceding day he had suffered from difficulty in breathing, with noisy inspiration, and total inability to swallow.

At the time of the examination he was lying upon his mother's lap, with his head thrown back. The muscles of the back of the neck were rigid; eyes prominent; respiration exceedingly laborious, and attended with vigorous movements of the alæ nasi; inspiration long, difficult, and stridulous. During inspiration the base of the thorax was surrounded by a transverse constriction. This disappeared during expiration, which was easy and noiseless. The voice was almost whispering, and his cry almost suppressed. The dyspnœa was so great as to prevent any attempt at crying or moving. He had no cough. The larynx was thrust forward so as to form a decided tumor in the neck. The anterior margin of the thyroid cartilage was sharply defined. There was some swelling upon either side of the larynx, at the posterior margin of the thyroid cartilage. It did not fluctuate. The examination gave rise to pain and uneasiness, but did not increase the dyspnœa. The boy was totally unable to nurse or to swallow either fluids or soft solids.

The chest was resonant on percussion. No râles could be heard in any part of it. The respiratory murmur was scarcely audible. His tongue was furred, and the mouth filled with mucus. A careful inspection of the pharynx revealed no disease, and an examination with the finger showed that there was not a retro-pharyngeal abscess. The epiglottis and parts around were examined with the finger and did not appear to be œdematous. This greatly increased the dyspnœa, and nearly cost the child his life. The patient was carefully watched, with directions not to allow him to die without the operation of tracheotomy having been performed. Warm poultices were applied to the throat to favour suppuration, under the impression that there was an abscess behind the larynx.

During the succeeding two days the prominence of the larynx increased, while the swelling extended from behind forwards. At this time it was thought that there was slight fluctuation near the median line, over the thyroid cartilage. An incision was made from the superior to the inferior margin of this, directly in the median line, and nearly two fluidrachms of thick yellow pus flowed out. The larynx immediately receded, the swelling disappeared, the intense dyspnœa and dysphagia ceased at once. From that moment recovery commenced, and there was not a symptom of disease afterwards.

CASE II. Boy æt. 9 weeks, healthy when born, but when less than a week

old he was attacked with erysipelas of the buttocks, which gradually spread upward until the whole of the body and head were affected. This was followed by an abscess over the upper part of the occipital bone, near the posterior fontanelle. The contents of this were withdrawn by the aspirator twelve days before the present disease began, and again ten days before. The abscess immediately refilled, and it was opened with a knife three days ago. The erysipelas exhausted the child greatly, but during the last month he has been improving. The present illness began suddenly ten days ago, with a wheezing in his throat. This was accompanied by some swelling about the larynx, and some noise in breathing. These symptoms continued until last evening.

Present Condition.—Lies with his eyes half closed and his head thrown back, as in commencing opisthotonos. The muscles on the back of the neck are rigid and tense.

The *alæ nasi* move rapidly in breathing. The external muscles of respiration are called into use, those of the neck acting violently. The sternum is arched forward. During inspiration the convexity of this bone is increased, and a deep gutter appears around the base of the chest, on a line with the ensiform cartilage. During expiration this disappears, so that the thorax is actually larger during the expiratory than during the inspiratory act. Breathing from forty to fifty, irregular. Inspiration extremely difficult, prolonged, and attended with a sharp stridulous sound which can be heard all over the ward. Expiration easy and noiseless; but little cough. The sound is hoarse, broken, and tends to become whispering. Cry nearly suppressed, but aphonia not quite complete. The thorax everywhere resonant on percussion, and auscultation reveals no evidences of disease of the lungs. Respiratory murmur inaudible; laryngeal sound heard by transmission over the whole of the surface of the chest.

Physical examination of the pharynx reveals no tumour; epiglottis can be distinctly felt, and there seems to be a little puffiness upon either side of its base. The examination produced much uneasiness, and was followed by profound dyspnoea; larynx thrust forward so as to produce a decided prominence on the anterior surface of the neck; some swelling just over the posterior margins of the thyroid cartilage; no fluctuation. The examination causes pain.

Tongue furred, mouth filled with dense opaque mucus, stomach irritable, and bowels constipated. Has considerable difficulty in swallowing, and cannot nurse at all; pulse weak, irregular, and from 140 to 160. The irregularity occurs during inspiration.

He continued to grow worse during the succeeding night, and died the next day of dyspnoea.

Post-mortem.—Pharynx perfectly healthy; larynx removed with the tongue and upper part of the trachea. The anterior aspect presented the following appearances: In the middle line and a short distance to either side, bounded by the inner border of the sterno-thyroid muscles, there was distinct fluctuation. Posteriorly to the outer margins of the same muscles, and upon either side, were other fluctuating swellings. The two projections communicated, and an impulse was transmitted from the surface of one to all the others; epiglottis erect, thin, and pale; cavity of the larynx nearly obliterated; contained no false membrane, and the mucous membrane was pale and healthy. Immediately without the epiglottis, between its base and the superior inner margin of the thyroid cartilage, were two fluctuating swellings, one upon either side. These compressed the epiglottis so that its lateral margins were nearly in contact and likewise nearly obliterated the rima glottidis. Fluctuation was communicated from these swellings to those on the sides and the centre of the anterior outer surface of the organ.

Upon making an incision in the median line, over the prominence of the thyroid cartilage, more than two drachms of thick yellow pus flowed out. The fluctuating prominences on the exterior and interior of the larynx immediately collapsed, and the cavity of the organ was restored to its natural size. A probe could be passed through the incision backwards, and around the posterior margins of the thyroid cartilage, upon either side, so as to put the mucous membrane of the interior of the larynx upon the stretch at any point. Perichondrium was separated from the thyroid cartilage upon both its inner and outer

surfaces. Both surfaces were eroded and rough, while its tissue was softer than when healthy. Cricoid cartilage perfectly healthy. Other organs of the body healthy.

The prognosis of this disease of the larynx, Dr. P. remarks, is evidently very serious, and to save the patient the treatment must be prompt and efficient. As soon as it is suspected, the child must be carefully watched. In the first case a free incision from the upper to the lower margin of the thyroid cartilage was followed by instantaneous relief and complete recovery. In the second the same result would probably have followed if we had boldly plunged the bistoury in. If the abscess can be opened in the median line, it should be done; and if not, the incision must be made upon a line with the posterior border of the thyroid cartilage, though it is true that in this locality some care has to be exercised, as the incision has to be made close to large vessels.

If this does not give relief, only one course is open—that is, to perform tracheotomy, with the hope that the life of the patient may be prolonged until the pus is discharged. Any one who has seen a case of this kind can have no doubt in regard to the propriety of such a proceeding.

Reclamation by L. A. Dugas, M.D., Prof. of Surgery in the Medical College of Georgia.

AUGUSTA, GA., May 10th, 1873.

To the Editor of the American Journal of the Medical Sciences.

I find in looking over the last edition of Professor Gross's great work upon Surgery that my diagnosis in dislocations of the shoulder is incorrectly stated, and I therefore beg leave to make a correction through the pages of your valuable Journal.

The statement of my views on the subject may be found in the *Southern Medical and Surgical Journal*, published in this city in March, 1856, p. 131, and also in the *Transactions of the American Medical Association* for 1857. The following is my language:—

“If the fingers of the injured limb can be placed by the patient or by the surgeon, upon the sound shoulder *while the elbow touches the thorax*, there can be no dislocation; and if this cannot be done, there must be a dislocation. In other words, it is physically impossible to *bring the elbow in contact with the sternum or front of the thorax* if there be a dislocation; and the inability to do this is *proof positive* of the existence of dislocation, inasmuch as no other injury of the shoulder joint can induce this disability.”

This is very plain, and yet Prof. Gross, on page 69 of vol. ii., says, “Another sign, although not an infallible one, first pointed out by Dr. Dugas, of Georgia, is the inability which the patient experiences in touching the sound shoulder with the hand of the injured limb.” Now, it is evident that Prof. Gross, inadvertently I am sure, leaves out one of the essential elements of my diagnosis, by the omission of the condition upon which rests the inability to touch the sound shoulder with the hand of the injured limb; that is to say, that *the elbow shall touch the front of the thorax*. Prof. G. is unquestionably right in pronouncing the diagnosis as stated by him “not an infallible one;” but, I respectfully insist that *it is* infallible as announced in my publications.

I have no personal aspirations to gratify by making this reclamation, but do so in order to vindicate the claims of American surgery. New elements of diagnosis, especially when based upon unerring physical laws, have been ever since the days of Laennec regarded as among the most valuable contributions to medical knowledge, inasmuch as they alone can lead us to sound practical deductions. If there be any merit in my diagnosis, let our country have the credit that may attach to it.

Yours very respectfully,

L. A. DUGAS.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

ONE HUNDRED AND EIGHTH SESSION.

Ninth Street, above Chestnut, Philadelphia.

The Lectures of the Session of 1873-4 will commence on the First Monday (6th) of October, and close on the last day of February ensuing.

MEDICAL FACULTY.

GEORGE B. WOOD, M.D., Emeritus Professor of Theory and Practice of Medicine.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH CARSON, M.D., Professor of Materia Medica and Pharmacy.
ROBERT E. ROGERS, M.D., Professor of Chemistry.
JOSEPH LEIDY, M.D., Professor of Anatomy.
FRANCIS G. SMITH, M.D., Professor of Institutes of Medicine.
R. A. F. PENROSE, M.D., { Professor of Obstetrics and the Diseases of Women and Children.
ALFRED STILLÉ, M.D., { Professor of Theory and Practice of Medicine, and of Clinical Medicine.
D. HAYES AGNEW, M.D., Professor of Surgery.
H. LENOX HODGE, M.D., Demonstrator of Anatomy.

Clinical Instruction is given daily throughout the year, in the Medical Hall, by the Professors and Clinical Lecturers, and twice a week at the Hospitals. At the Philadelphia Hospital, and at the Pennsylvania Hospital, the instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the first of September.

The room for Operative Surgery and the Application of Bandages, etc. etc., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

Lectures are delivered by the members of the Summer Association annually during the months of April, May, and June, September, and the early part of October.

The lectures of this Preliminary Course will this year begin on Monday, September 1, and continue until the opening of the Regular Session. These Lectures are free to all matriculates of the University, upon registering their names with the Secretary of the Association, who will furnish them with tickets.

EXPENSES.—Fees for the Course of Lectures, \$140. Matriculation Fee (paid once only), \$5. Graduating Fee, \$30.

R. E. ROGERS, M.D.,

Dean of the Medical Faculty, University Building.

W. H. SALVADOR, *Janitor, University Building.*

P. S.—Board may be had at from \$5 00 to \$6 00 per week.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1873-74.

THE Collegiate year in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1873-74, will commence on Wednesday, September 17, 1873, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students designing to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, October 1st, 1873, and end about the 1st of March, 1874.

FACULTY.

ISAAC E. TAYLOR, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M.D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

FRANK H. HAMILTON, M.D., LL.D., Professor of Practice of Surgery with Operations and Clinical Surgery.

LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M.D., Professor of Clinical and Operative Surgery.

W. H. VAN BUREN, M.D., Professor of Principles of Surgery with Diseases of the Genito-Urinary System and Clinical Surgery.

WILLIAM T. LUSK, M.D., D. WARREN BRICKELL, M.D., Professors of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

WILLIAM A. HAMMOND, M.D., Professor of Materia Medica and Therapeutics, Diseases of the Mind and Nervous System, and Clinical Medicine.

AUSTIN FLINT, JR., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSBY, M.D., Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., Professor of Chemistry and Toxicology.

Professors of Special Departments, etc.

HENRY D. NOYES, M.D., Surgeon to the Charity Hospital, etc.; Professor of Ophthalmology and Otology.

EDWARD L. KEYES, M.D., Surgeon to the Charity Hospital, etc.; Professor of Dermatology, and Assistant to the Chair of Principles of Surgery, etc.

EDWARD G. JANEWAY, M.D., Physician to the Bellevue Hospital, etc.; Professor of Pathological and Practical Anatomy. (Demonstrator of Anatomy.)

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons to the Bellevue Hospital and the great Charity Hospital on Blackwell's Island.

The Summer Session will consist chiefly of Recitation from Text-books. This term continues from March 17th to July 1st. During this Session there will be daily recitations in all the departments held by a corps of examiners appointed by the regular Faculty. Regular Clinics will also be held.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including	
Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations and Clinics	50 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. AUSTIN FLINT, JR., Bellevue Hospital Medical College.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS.

NINETIETH ANNUAL ANNOUNCEMENT. (1873-74.)

The plan of Study in this School was radically changed in 1871. Instruction is now given by lectures, recitations, clinical teaching, and practical exercises uniformly distributed throughout the academic year. This year begins September 25, and ends on the last Wednesday in June; it is divided into two equal terms, with a recess of one week between them. There is also a recess of one week at Christmas. Either of these two terms is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction.

The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically, from one subject to another in a just and natural order. Instead of the customary hasty oral examination for the Degree of Doctor of Medicine, held at the end of the three years' period of study, a series of examinations on all the main subjects of medical instruction has been distributed for regular students through the whole three years; but they may be passed by other students either all at once or at the end of their course, or, successively, at several times. Every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction at some time during his period of study. The general subjects of the Regular Course of study are:

For the First Year—Anatomy, Physiology, and General Chemistry.

For the Second Year—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

For the Third Year—Pathological Anatomy, Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Students who take the regular course of the School are divided into three classes, according to their time of study and proficiency. Students may be admitted to advanced standing in the regular course; but all persons who apply for admission into the second or third year's class, must pass an examination in the branches already pursued by the class to which they seek admission. Students who fail in any subject at one examination may be examined again at the next examination. The regular examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and Chemistry.

" " second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

" " third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Examinations are also held a week before the opening of the School in September, and at the close of the first term in February, but the latter is open only to students joining the School at that time and to those who have failed at previous examinations.

Students who began their professional studies elsewhere, may be admitted to the School and become candidates for a degree without joining the regular classes; such students may take up the subjects which they have not previously studied, in such order as may be thought best, passing the examinations at the beginning and end of each year. Students who do not intend to offer themselves for a degree, may join the School for one term or more, and pay for instruction in such subjects as they select. Such students will be furnished, without examination, with certificates of attendance.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this School, have passed the required examinations, and have presented a thesis.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine, additional facilities for pursuing clinical, laboratory, and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises the following branches: Physiology; Medical Chemistry; Pathological Anatomy; Surgery; Auscultation, Percussion, and Laryngoscopy; Ophthalmology; Otology; Hygiene; Dermatology; Syphilis; Psychological Medicine; Electro-Therapeutics; Gynecology, and Obstetrics.

Those pursuing this course may elect the studies to which they will give their attention, and allot the time they will devote to each. They will have the privilege of attending any of the other exercises of the Medical School, the use of its laboratories and library, and all other rights accorded by the University. They will be exempt, unless at their option, from examinations, and may obtain a certificate of attendance on this course of advanced study. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—For Matriculation, \$5; for the Year, \$200; for either term, \$120; for Graduation, \$30; for courses in single subjects, according to the detailed announcement in catalogue.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

Dr. C. ELLIS, *Dean*, 114 Boylston Street, Boston, Mass.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA,

NEW ORLEANS.

MEDICAL FACULTY.

A. H. CENAS, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

JAMES JONES, M.D., Professor of Obstetrics and Diseases of Women and Children.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLÉ, M.D., Professor of Physiology and Pathological Anatomy.

FRANK HAWTHORN, M.D., Professor of Materia Medica and Therapeutics, and Clinical Medicine.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

Demonstrator of Anatomy, EDMOND SOUCHON, M.D.

The next annual course of instruction in this Department (now in the fortieth year of its existence), will commence on Monday, the 17th day of November, 1873, and terminate on the third Saturday of March, 1874. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 20th of October, without any charge to students.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for Clinical Instruction.

The act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received during the last year more than *six thousand* patients. Its advantages for professional study are unequalled by any similar institution in this country. The medical, surgical, and obstetric wards are visited by the respective professors in charge daily, from 8 to 10 o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Hawthorn, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administration of the hospital elect annually twelve resident students who are maintained in the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Graduates of other recognized schools may attend all the lectures upon payment of the matriculation fee; but they will not be admitted as candidates for the Diploma of the University except upon the terms required of second course students. All fees payable in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean*.

PHILADELPHIA SCHOOL OF ANATOMY,

Chant Street, Tenth Street above Chestnut, opposite the Mercantile Library.

COURSES OF LECTURES ON PRACTICAL SUBJECTS.

The following Courses of Lectures will be delivered in this Institution during each WINTER and SUMMER Session.

- | | |
|---|------------------------|
| I. Anatomy | By Dr. W. W. KEEN. |
| II. Operative Surgery | " Dr. W. W. KEEN. |
| III. Bandaging, Fractures, and Fracture Dressings | " Dr. O. H. ALLIS, |
| | 1005 Walnut Street. |
| IV. Physical Diagnosis | " Dr. STANLEY SMITH, |
| | 201 South 11th Street. |

The Course on ANATOMY begins the day after the Colleges open in October and in April, and consists of systematic Lectures, amply illustrated by the Class Microscope, Dissections, Models, &c.

The DISSECTING ROOMS are open all the year, except July and August, with a full supply of material.

Each of the other Courses begins one week later, and consists of practical demonstrations to the class, after which each member in turn is exercised in the various operations, applies the bandages or fracture dressings, or auscults and percusses the patients.

Fee for each Course \$10.

For further information, apply to the Janitor, at the Rooms, or to

W. W. KEEN, M.D.,

1729 Chestnut Street. (3½ to 5 P.M.)

THE WILLS OPHTHALMIC HOSPITAL,

Race Street, between Eighteenth and Nineteenth Sts., Philadelphia.

A COURSE OF LECTURES, DIDACTIC AND CLINICAL, ON OPHTHALMIC SURGERY, will be given at the Hospital during the months of November, December, and January, on Saturday evenings, between 8 and 10 o'clock.

The course will embrace all of the important branches of Ophthalmic Science, and will include the *Anatomy and Pathology of the Eye, the Physiology of Vision, the Refraction and Accommodation of the Eye, the Use of the Ophthalmoscope, and the Operative Surgery of the Eye.*

The large Clinics of the Hospital will afford abundant opportunities for the demonstration of the *General Diseases, Optical Defects, and Operative Surgery of the Eye.*

Each member of the class will be afforded instruction in the Use of the Ophthalmoscope, and in the practice of Operations on the Cadaver.

The Diagnosis of the Optical Defects which produce *Long, Short, or Weak Sight, Astigmatism, Strabismus, etc.*, and their Correction by the Scientific Use of Glasses, will be illustrated by apparatus and Clinical demonstration.

FEE FOR THE COURSE TEN DOLLARS.

Operative and Clinical Surgery of the Eye.

R. J. LEVIS, M. D., N. W. cor. Arch and 13th Sts.

Anatomy of the Eye, and Ophthalmoscopy.

GEO. C. HARLAN, M.D., 1806 Chestnut St.

Physiology of Vision, Refraction, and General Diseases of the Eye.

EZRA DYER, M.D., 1429 Walnut St.

JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

The next Annual Session will commence on Monday, 6th October, 1873. Preliminary Lectures will begin on the first Monday in September.

FACULTY.

JOSEPH PANCOAST, M.D.,	Professor of Anatomy.
SAMUEL D. GROSS, M.D.,	Professor of Surgery.
ELLERSLIE WALLACE, M.D.,	Professor of Obstetrics.
B. HOWARD RAND, M.D.,	Professor of Chemistry.
JOHN B. BIDDLE, M.D.,	Professor of Materia Medica.
J. AITKEN MEIGS, M.D.,	Professor of Institutes of Medicine.
J. M. DACOSTA, M.D.,	Professor of Practice of Medicine.

Fees for full course, \$140; Matriculation, \$5; Graduation, \$30.

The number of Matriculates for the session 1872-3 was 462; of Graduates, 149.

J. B. BIDDLE, M.D.,

Dean of the Faculty.

UNIVERSITY OF MICHIGAN—MEDICAL DEPARTMENT.

THE Lectures of the Session 1873-74 will commence on the first day of October, and continue for six months.

Besides the Clinical Lectures, four Didactic Lectures will be delivered daily through the entire term.

A Course separate, but equal, for women.

FEES.—To students of Michigan, \$20 for the first year; \$10 for all subsequent years.

To all others, \$35 for the first year, and \$10 for all subsequent years.

For circulars address,

ABM. SAGER, M.D.,

Dean of the Medical Faculty, Ann Arbor, Michigan.

UNION UNIVERSITY—ALBANY MEDICAL COLLEGE, 1873.

FACULTY OF MEDICINE.

JAMES McNAUGHTON, M.D., Theory and Practice of Medicine.

JAMES H. ARMSBY, M.D., Principles and Practice of Surgery and Clinical Surgery.

EDMUND R. PEASLEE, M.D., LL.D., N. Y. City, Diseases of Women.

MEREDITH CLYMER, M.D., N. Y. City, Diseases of the Nervous System and of the Mind.

WILLIAM P. SEYMOUR, M.D., Troy, N. Y., Obstetrics and Diseases of Children.

JOHN V. LANSING, M.D., Physiology and Clinical Medicine.

ALBERT VANDERVEER, M.D., General and Special Anatomy.

HENRY R. HASKINS, M.D., Surgical and Descriptive Anatomy.

GEORGE T. STEVENS, M.D., Ophthalmic and Orthopedic Surgery.

JOHN M. BIGELOW, M.D., Materia Medica and Therapeutics.

MAURICE PERKINS, A.M., M.D., Schenectady, N. Y., Chemistry and Toxicology.

HON. IRA HARRIS, LL.D., Medical Jurisprudence.

WILLIAM HAILES, M.D., Demonstrator of Anatomy.

WILLIS G. TUCKER, M.D., Assistant to the Prof. of Chemistry.

The next Annual Course of instruction will commence on the 1st Tuesday of September, 1873, and continue twenty weeks. The City Hospital, in the immediate neighbourhood of the College, furnishes abundant facilities for the illustration of Clinical Medicine and Surgery. The Dissecting-Rooms are kept amply supplied with anatomical material, and the working Laboratory affords special advantages for the study of Chemistry.

FEES for the Course, \$100; Perpetual Ticket, \$150; Graduation Fee, \$25; Matriculation, \$5. Board may be had from \$4 to \$6 per week. For further information address

J. V. LANSING, M.D., Registrar, Albany, N. Y.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR OCTOBER 1873.

CONTRIBUTORS TO THIS VOLUME.

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 W. S. W. RUSCHENBERGER, M.D., *United States Navy.*
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 B. VAN VALZAH, M.D., *of Spring Mills, Pennsylvania.*
 WILLIAM LEHMAN WELLS, M.D., *of Philadelphia.*
 HORATIO C. WOOD, JR., M.D., *Prof. of Botany in the University of Pennsylvania.*
 ALFRED S. YATES, M.D., *of Franklin Parish, St. Mary's, Louisiana.*
 A. YOUNG, M.D., *of Prescott, Iowa.*

TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Quarantaines. Par M. le Dr. LÉON COLIN, Médecin Principal de l'Armée. Extrait du Dictionnaire Encyclopédique des Sciences Médicales.

Die Orthopaedische Behandlung der Pott'schen Kyphose. Von CHAS. FAYETTE TAYLOR, A.M., M.D. Berlin: 1873.

A Treatise on the Continued Fevers of Great Britain. By CHARLES MURCHISON, M.D., LL.D., F.R.S., Phys. and Lecturer on the Prin. and Prac. of Medicine, St. Thomas's Hospital. Second edition. London: Longmans, Green & Co., 1873.

Observations on the Surgical Treatment of In-growing Toe-nail. By GEORGE STILWELL, Surgeon, Epsom. London: J. & A. Churchill, 1873.

On the Results of Thyrotomy for the Removal of Growths from the Larynx. By MORELL MACKENZIE, M.D. Lond. London: J. & A. Churchill, 1873.

On the Causation of Sleep; A Physiological Essay. By JAMES CAPPIE, M.D. Edinburgh: James Thin, 1872.

Fever and Cholera from a New Point of View. By ALEXANDER SMITH, M.D., Edin., Staff Surgeon-Major. Calcutta: Wm. Smith, 1873.

Experimental Researches on the Causes and Nature of Catarrhus Æstivus (Hay-fever or Hay-asthma). By CHARLES H. BLACKLEY, M.R.C.S. Eng. London: Baillière, Tindall & Cox, 1873.

On Marienbad Spa and the Diseases curable by its Water and Baths. By APOLLINARIS VICTOR JAGIELSKI, M.D. London: Trübner & Co., 1873.

On Nervous or Sick-Headache; its Varieties and Treatment. By P. W. LATHAM, M.D., Phys. to Addenbrooke's Hosp. Cambridge: Deighton Bell & Co., 1873.

A New Operation for Anchylosis of the Elbow-joint resulting from Fracture, and Rigidity the Result of Unreduced Dislocation. By PATRICK HERON WATSON, M.D., F.R.S. Edinburgh, 1873.

Body and Mind; an Inquiry into their Connection and Mutual Influence, specially in reference to Mental Disorders. An enlarged and revised edition. To which are added Psychological Essays. By HENRY MAUDSLEY, M.D., F.R.C.P., Prof. of Med. Jurisprudence in Univ. Coll., Lond., etc. London: Macmillan & Co., 1873.

On the Treatment of Diseases of the Skin; with an Analysis of Eleven Thousand Consecutive Cases. By Dr. McCALL ANDERSON, Prof. of Prac. of Med. in Anderson's Univ., etc. Philadelphia: Henry C. Lea, 1873.

Chemistry; General, Medical, and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. By JOHN ATTFIELD, Ph.D., F.C.S. Fifth edition, revised from the fourth (English) edition, by the author. Philadelphia: Henry C. Lea, 1873.

An Introduction to the Study of Clinical Medicine; being a Guide to the investigation of Disease. For the use of Students. By OCTAVIUS STURGES, M.D. Cantab., Assist. Phys. to the Westminster Hospital, etc. Philadelphia: Henry C. Lea, 1873.

Handbook of Physiology. By WILLIAM SENHOUSE KIRKES, M.D. Edited by W. MORRANT BAKER, F.R.C.S., Lect. on Phys., and Assist. Surgeon to St. Bartholomew's Hosp., etc. With two hundred and forty-eight illustrations. A new American, from the eighth enlarged English edition. Philadelphia: Henry C. Lea, 1873.

The Diseases of the Prostate; their Pathology and Treatment. Comprising the Jacksonian Prize Essay for the year 1860. By Sir HENRY THOMPSON, F.R.C.S., Surgeon Extraordinary to H. M. the King of the Belgians. Fourth edition. Philadelphia: Henry C. Lea, 1873.

A Manual of Medical Jurisprudence. By ALFRED SWAINE TAYLOR, M.D., F.R.S., Prof. of Med. Jurisprudence and Chemistry in Guy's Hospital. Seventh Am. edition, revised from the author's latest notes, and edited, with additional notes and references, by JOHN J. REESE, M.D., Prof. of Med. Jurisprudence and Toxicology in the Univ. of Penn. With illustrations on wood. Philadelphia: Henry C. Lea, 1873.

Chemistry, Inorganic and Organic; with experiments. By CHARLES LOUDON BLOXAM, Prof. of Chemistry in King's Coll., London, etc. From the second and revised English edition. Philadelphia: Henry C. Lea, 1873.

Contributions to Practical Surgery. By GEORGE W. NORRIS, M.D., late Surgeon to the Pennsylvania Hospital, etc. Philadelphia: Lindsay & Blakiston, 1873.

Pharmaceutical Lexicon; designed as a Guide for the Pharmaceutist, Druggist, Physician, etc. By H. V. SWERINGEN. Philadelphia: Lindsay & Blakiston, 1873.

Skin Diseases; their Description, Pathology, Diagnosis, and Treatment. By TILBURY FOX, M.D. Lond., Phys. to Depart. for Skin Dis. in University Coll. Hosp. Second Am. from third London ed. New York: William Wood & Co., 1873.

Insanity in its relations to Crime. A Text and a Commentary. By WILLIAM A. HAMMOND, M.D. New York: D. Appleton & Co., 1873.

The Cerebral Convulsions of Man, represented according to Original Observations, especially upon their development in the Fœtus. By ALEXANDER ECKER, Prof. of Anatomy and Comp. Anat. in Univ. of Freiburg, Baden. Translated by ROBERT T. EDES, M.D. New York: D. Appleton & Co., 1873.

Clinical Electro-Therapeutics, Medical and Surgical; a Handbook for Physicians in the Treatment of Nervous and other Diseases. By ALLAN McLANE HAMILTON, M.D., Phys. in Charge of N. Y. State Hosp. for Dis. of Nervous Syst., etc. With numerous illustrations. New York: D. Appleton & Co., 1873.

The Medical Department of the United States Army from 1755 to 1873. Compiled under the direction of the Surgeon-General, by HARVEY E. BROWN, Assist. Surgeon U. S. Army. Washington, 1873.

The Handbook for Midwives. By HENRY FLY SMITH, B.A., M.B. Oxon., formerly Phys. to "The Dispensary," Exeter, etc. Boston: James Campbell, 1873.

Six Months under the Red Cross, with the French Army. By GEORGE HALSTEAD BOYLAND, M.D., Ex-chirurgien de l'Armée Française. Cincinnati: Robert Clarke & Co., 1873.

Physician's Pocket-case Record Prescription Blank Book. Cincinnati: Robert Clarke & Co., 1873.

Clinical Reports from Private Practice. By JOHN HERBERT CLAIBORNE, A.M., M.D., Vice-President of the Medical Society of Virginia, etc. Petersburg: 1873.

Fractures of the Elbow-joint. By WALTER EVA. Cambridge: 1873.

Ideal Characters of the Officers of a Hospital for the Insane. By I. RAY, M.D. Philadelphia, 1873.

Ergot in the Treatment of Nervous Diseases. By DANIEL H. KITCHEN, M.D., Assist. Phys. of the New York State Lunatic Asylum.

The Etiology and Indications for Treatment of Irregular Uterine Action during Labour. By WILLIAM T. LUSK, M.D. New York, 1873.

Accommodation and Refraction. By DUDLEY S. REYNOLDS, M.D. Louisville, 1873.

Decision in a Suit of Malpractice. Carpenter v. Blake.

A Botanical Index to all the Medicinal Plants, Barks, Roots, Seeds, and Flowers usually kept by Druggists. By ALLAN POLLOCK, Druggist. New ed., revised and enlarged. New York: Allan Pollock, 1873.

An Eye Case in the Courts. By C. A. ROBERTSON, A.M., M.D. Albany, 1873.

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ART. I — *Cerebro-spinal Fever, with Facts and Statistics of the recent Epidemic in New York City.* By J. LEWIS SMITH, M.D., Physician to Infant's Hospital, Randall's Island; Consulting Physician to New York Infant Asylum; Consulting Physician to the Class of Children's Diseases, Bureau for the Relief of the Outdoor Poor, Bellevue. (With a wood-cut.)

CEREBRO-SPINAL fever, designated also spotted fever, tetanoid fever, and cerebro-spinal meningitis, is an epidemic constitutional disease, manifesting itself by lesions and symptoms which pertain chiefly to the nervous system. Descriptions of occasional epidemics, which appear to have been of this malady, have been left us by writers as far back as the 15th century, but it was not clearly discriminated from typhus on the one hand, and local inflammatory affections of the cerebro-spinal axis on the other, till after the present century commenced. Since 1805, when Vieusseux wrote upon it, styling it a new and unusual affection which neither he nor his colleagues had seen, numerous epidemics presenting great sameness of character, have been observed in Europe, Northern Africa, and North America. These have been minutely described by various writers, among whom in Europe, as especially deserving of notice, may be mentioned Dr. Sanderson, of London, and Prof. Hirsch, of Germany.

In this country epidemics of cerebro-spinal fever were fully described by various observers in the first quarter of the present century. The papers relating to them, from the pens of North and Strong in 1811, Gallop in 1815, and Miner in 1825, compare favorably with any similar productions during the same period in Europe. Since this time several excellent monographs relating to cerebro-spinal fever have appeared in this country, and the medical journals contain numerous reports of cases.

So much has, indeed, been written on this disease during the last two decades, that it may seem an unneeded and superfluous work to add anything to the literature of the subject. But when we recollect that some of the best monographs which we possess relating to it, were written by those who have seen but few cases, and some of whom, like Sanderson, travelled to a distance to observe them, we physicians of this country, now that we have had an ample opportunity to observe cases at home in a wide-spread epidemic, with those recent aids in the study of diseases, namely, the thermometer and ophthalmoscope, ought certainly to make known our observations to the profession. Moreover few diseases more urgently demand elucidation than this, for while it is very fatal, there is a discrepancy in the views of physicians in regard to its causes, nature and proper treatment. As cerebro-spinal fever results from some pervading cause, probably as we will see atmospheric, we would expect to observe effects of this cause, in some other way, in addition to the disease of which we are treating. Accordingly, the histories of at least a portion of the epidemics of cerebro-spinal fever show an unusual prevalence of pneumonias of an ataxic type, and sometimes also of pharyngitis, in addition to the cerebro-spinal disease, and this disease is sometimes complicated by congestion, and less frequently by inflammation of the lungs. The prevalence of typhoid pneumonias during cerebro-spinal fever was long ago observed. Thus, in Bascome's history of epidemics, it is stated that "epidemic encephalitis and malignant pneumonias prevailed in Germany (Webber) in the 16th century." In this country, in the epidemics of cerebro-spinal fever from 1811 to 1815, pharyngeal and pneumatic inflammations were unusually frequent. In more recent epidemics observers have not so often, but have occasionally, recorded the prevalence of pneumonias in connection with cases of the cerebro-spinal disease. Accordingly, Webber, who has examined the histories of the various epidemics, describes in his prize essay a second variety of cerebro-spinal fever, which he designates pneumonic, in which the cerebro-spinal axis is involved but slightly, or not at all, and the brunt of the disease falls upon the respiratory organs. In certain epidemics, according to him, the pneumonic form is common, while in others it is infrequent.

During the time when the recent epidemic in New York City was at its maximum, an unusually large number of cases of pleuro-pneumonia of an asthenic type, and I may add, I think, of pharyngitis, occurred; and while cerebro-spinal fever rarely affected those above the age of fifty years, many of those with pneumonia were old people. According to the statistics of the New York Health Board, there were 1707 deaths from diseases of the respiratory organs, exclusive of phthisis, during the four months from February 1st to June 1st, 1872, when the epidemic of cerebro-spinal fever was at its height, while during the remaining eight months of the year there were only 1336 deaths from the same diseases; and I need not add

that deaths from affections of the respiratory apparatus are largely from pneumonia. Moreover, I am of opinion, from my own observations, that many of the cases of pneumonia, during that period, presented symptoms of greater gravity than usually accompany this form of inflammation of the same extent. The patients were greatly prostrated from the first, and in some of them febrile movement, muscular pains, restlessness, or delirium preceded for hours or even days the pneumonic symptoms, affording evidence that the lung disease, if not due entirely to the same atmospheric conditions which give rise to cerebro-spinal fever, was at least under their influence. Although it is probable that pneumonia occurring during an epidemic of cerebro-spinal fever is in most instances a strictly local malady, as it is at ordinary times, more or less modified perhaps by the epidemic influence, there can be little doubt that Webber's view is correct, that there are occasional cases of true cerebro-spinal fever, in which the local manifestations are chiefly in the lungs; cases in which the cerebro-spinal affection is of less importance apparently than the pulmonic. The following case which occurred in my practice is an example.

Mrs. L., aged about 25 years, suckling her infant, and of rather delicate health, was seized on June 8th with pain in the head and right subaxillary region. In two or three hours the pain of the thorax ceased, but that in the head continued and was very severe. On the 9th there was little change in the symptoms, the patient complaining only of the violent frontal headache. At my first visit, which was on the 10th, Mrs. L. stated that objects were indistinct, but the appearance of the eyes was normal; pulse 118, temp. 105° ; evening, pulse 104, temp. 102° . The patient moaned, and obtained little or no sleep in consequence of the severity of the headache. Treatment, potass. bromid. gr. xxv, every three or four hours, ice to head, sinapism to nucha. On the 11th she seemed better; there was a remission of the symptoms, and for two hours she was entirely free from headache. The remission was succeeded by a chill, followed by severe pain in the head, in the right mammary or subaxillary region, and in the right shoulder.

12th. Symptoms the same, pulse 112.

13th. The pain in the head has ceased, but that in the right side of the chest is more severe, and respiration is accompanied by a moan; resp. 32, pulse 116, temp. 105° . There is rigidity of the muscles of the nucha, so that it is impossible to bring forward the head upon the chest. Attempts to do it are painful, and the shoulders move with the head. There are general hyperæsthesia and well-marked physical signs of pleuro-pneumonia of the right lower lobe. *Diagnosis*: cerebro-spinal fever, with spinal meningitis and pleuro-pneumonia.

14th. Has no pain except that of the chest; pulse 114, temp. 105° ; evening, pulse 132.

15th. Pulse 136; resp. 48, with an expiratory moan; temp. $104\frac{1}{2}^{\circ}$; muscles of the nucha still contracted, preventing anterior movement of the head; still has general hyperæsthesia, but no headache; tongue moderately furred and rather dry; appearance of eyes normal; has had no vomiting; little or no delirium, and no cutaneous eruption. Treatment, quinae sulph. gr. iv, every four hours, alternately with gr. xxv of bromide of potassium; nutritious diet and alcoholic stimulants.

16th. Pulse 128; resp. 52; temp. $104\frac{3}{4}^{\circ}$; entire lower lobe of right lung is solidified; evening, pulse 140, feeble. Death occurred June 17th.

In this case the violent headache, dimness of sight, marked stiffness of the muscles of the nucha, and the hyperæsthesia indicated cerebro-spinal fever as the disease, and yet the cerebral symptoms abated in a few days, and the prominent local symptoms in the last of the sickness were due chiefly to the pneumonia. In another case, which was visited by three prominent physicians of this city, who agreed in the diagnosis of cerebro-spinal fever, pneumonia of the right lung was suddenly developed at about the sixth or seventh day. The chief symptoms subsequently were referable to the pneumonia, and when this abated the patient recovered.

Cause.—Does it emanate from the soil? The following facts demonstrate that it does not, to wit: most of the epidemics commence in winter when the ground is frozen; the disease occurs in valleys and on hilltops; and upon all varieties of soil; it invades one district, passes over another adjoining, and affects, perhaps, a third beyond, although the geological formation of all is the same.

Does the cause exist in the diet, as some competent observers have supposed? The following facts, I believe, are sufficient to justify a negative answer: Of two adjacent localities, in which the nature of the diet of the inhabitants is the same, one escapes and the other is visited by the epidemic; an epidemic sometimes prevails here and there over an area of many thousand miles, as recently in North America. It is hardly reasonable to suppose that any deleterious property would occur in the food over so wide a territory. An epidemic ceases, although the food of the people continues the same. Infants at the breast, having only the mother's milk, are sometimes affected, and likewise certain animals, whose food is very different from that of man, and finally the most careful examinations have hitherto failed to discover any change in the cereals, or other food, or noxious principle sufficient to explain the occurrence of the disease over a wide extent of territory.

There can, therefore, be little doubt that the cause exists in the atmosphere, though so subtle that we may never be able to detect it. Cerebro-spinal fever is indeed one of many examples in corroboration of the statement made by Humboldt, that there is no subject of scientific inquiry more obscure than the laws which control epidemics. Among the meteorological conditions which favor the occurrence of this disease, cool weather has already been alluded to. Statistics collected in France and the United States show that, while 166 epidemics occurred in the six months commencing with December, only 50 occurred in the remaining six months of the year. According to Prof. Hirsch, whose statistics were obtained largely from Central Europe, there were 57 epidemics in winter or winter and spring, 11 in spring, 5 between spring and autumn, 4 commencing in

autumn and extending into winter or winter and spring, and 6 lasting through the entire year.

All observers have remarked the fact that anti-hygienic conditions, though obviously subordinate to the unknown atmospheric cause, nevertheless strongly predispose to this disease. Hence, soldiers in barracks and the poor in tenement houses suffer most severely. During the recent epidemic in New York, unusually severe or multiple cases occurred for the most part where there were obvious anti-hygienic conditions, as in apartments which were unusually crowded and filthy or in tenements around which refuse had collected or which had defective drainage. The interesting chart, prepared under the direction of Dr. Moreau Morris for the Health Board, shows that comparatively few cases occurred in those portions of the city where the sanitary conditions were good. I can not, however, agree with Prof. Hirsch that the greater crowding, domiciliary and personal uncleanness, and imperfect ventilation in the cool than in the warm months, explain the fact that epidemics occur chiefly in winter and early spring; for in clean and well-ventilated apartments in sparsely settled and salubrious localities, epidemics occur for the most part in these seasons. Anti-hygienic conditions probably predispose to this disease in the same way and no more than to any other grave epidemic which happens to be prevailing, as for example to Asiatic cholera, whose ravages are largely in the crowded and uncleanly quarters of the poor.

Is cerebro-spinal fever propagated by contagion?—It is the almost unanimous opinion of those who are most competent to judge from their observations, that it is either not contagious or is so only in a very slight degree. It is certain that the vast majority of cases occur without the possibility of personal communication. Thus, in the commencement of an epidemic, the first patients are affected here and there at a distance from each other, often miles apart, and throughout an epidemic usually only one is seized in a family. Children may be around the bedside of the patient, passing in and out of the room without restriction, and yet we can confidently predict that none of them will contract the disease if there are proper ventilation and cleanliness. And when two or more cases occur in a family, it commences at such irregular intervals in the different patients that the presumption is strong that they receive it from the same extraneous source, and not one from the other, for contagious diseases usually have a pretty uniform incubative period. Thus, in the Brown family treated by Dr. Sewall (*N. Y. Med. Record*, July 1, 1872), the first child sickened January 30th, and the remaining five children at intervals respectively of 5, 7, 11, 25, and 45 days. The following have been my observations relating to this point:—

Single cases, No. 39 (4 adults).

Two in a family, No. 16 (8 families).

Three in a family, No. 3 (1 family).

In most of the 39 families in which single cases occurred, there were children who were allowed free intercourse with the patients. Is there any other malady of childhood known to be infectious, which affords such a record of non-contagion? In those instances in which two in a family took the fever, those who were last attacked did not seem to receive it from those who were first affected, for the reason already stated, namely the very variable intervals between the two cases in the different families. The facts in the family in which three cases occurred, did seem to lend support to the doctrine of contagion. A boy twelve years of age died of cerebro-spinal fever, and was buried on Saturday or Sunday. On the following Monday the mother washed the linen of the boy, which had accumulated, and within two days was herself affected with the disease. She and her infant, who was also seized with it, died. Were such cases frequent or not infrequent, the argument in favor of contagion would certainly be strong; but as they are infrequent it is proper to accept any other reasonable explanation instead. The state of the bedding and apartments, as observed by me, was such as to render the atmosphere in which this family lived noxious in a high degree, and therefore such as to attract the prevailing epidemic. Moreover, the mother, exhausted by her long watching, and deprived of needed sleep (for the boy was several days sick), instead of obtaining the required rest, rendered her system more liable to the fever by her self-imposed duties on the day following the burial. These manifest anti-hygienic conditions appeared quite sufficient, without the aid of any contagious principle, to explain the occurrence of the cases in this severely visited family. My statistics, therefore, harmonize with the doctrine of non-contagiousness, but it is obviously very difficult to determine from clinical experience whether an epidemic constitutional disease is absolutely non-contagious, or contagious in a very low degree. Cerebro-spinal fever is one or the other, but if contagious it is apparently less so than either typhoid fever or Asiatic cholera.

Allusion has been made to the fact that this malady sometimes occurs among the lower animals. In the epidemic of 1811 in Vermont, Dr. Gallop remarks that even the foxes seemed to be affected, so that they were killed in numbers near the dwellings of the inhabitants. The recent epidemic in New York, it is well known, prevailed among horses several months before it occurred among the people. It was common and fatal in the large stables of the city car and stage lines in 1871, while among the people the epidemic did not properly commence, although there were previously isolated cases, till January, 1872. It has been asked, whether in epidemics like this, in which the lower animals are first affected, the disease may not be communicated from them to man? This obviously brings up the question of contagiousness. From my own observations I should certainly answer in the negative, for I have not been able to ascertain that those who had charge of the affected horses in the recent

epidemic, as the veterinary surgeons or stablemen, were any more liable to the fever than others, who were not so exposed. They apparently were not, and we must, therefore, believe that this disease is not propagated from one species of animals to another, certainly no more than from one animal to another in the same species, and the fact that different animals are affected by the epidemic is due to the potent and pervading nature of the cause. Cerebro-spinal fever is indeed, so to speak, pandemic in a double sense; on the one hand affecting both sexes, different ages, and all conditions of people over a wide extent of territory, and on the other hand different species of animals, but with little or no contagiousness.

Not infrequently we are able to discover some exciting cause of the fever, usually an exhausting or perturbing influence of some sort. An individual, whose system is affected by the epidemic influence, and is therefore predisposed to the disease, may, perhaps, escape by a quiet and regular mode of life; but if there is an exciting cause of the nature alluded to, the fever may be developed. Among these exciting causes may be mentioned overwork, fatigue, mental excitement, prolonged abstinence from food, followed by over-eating, and the use of indigestible and improper food. Thus, in one instance in my practice, a delicate young woman at the head of one of the departments in a well-known Broadway store, was anxious and excited and her energies overtaxed at the annual re-opening. Within a day or two subsequently the disease commenced. Another patient, a boy, was seized after a day of unusual excitement and exposure, having in the mean time bathed in the Hudson when the weather was quite cool. During the recent epidemic in New York those children seemed to me especially liable to be attacked who were subjected to the severe discipline of the public schools, returning home fatigued and hungry, and eating heartily at a late hour. In one instance which I observed, a school-girl of 10 years returned from school excited and crying, because she had failed in her examination and was not promoted. In the evening, after she had closely studied her lessons, the fever commenced with violent headache. Dr. Frothingham (*Am. Med. Times*, April 30, 1864) writes as follows of the brigade in which cerebro-spinal fever occurred in the Army of the Potomac: "Under Gen. Butterfield, a stern disciplinarian, * * the men were drilled to the full extent of their powers—often to exhaustion. I did not at the time recognize this as a cause of the disease in question, but I learn that in the present epidemic in Pennsylvania the attack generally follows unusual exertion and exposure to cold." Observers have long recognized the fact of such exciting causes. Dr. Gallop, in his history of the epidemic in Vermont in 1811, directs attention to the severity of the disease among the troops under General Dearborn, who were fatigued by marches, and greatly dispirited by a repulse which they had sustained from the British.

Sex.—It is stated by writers that more males are affected than females.

Hospital and military statistics show this ; but in family practice, in which a large proportion of the patients are children, the number of males and females is about equal. Thus in 75 cases occurring in the 20th and 22d wards, mainly in the practice of two other physicians and myself, I find that there were 39 males and 36 females. Sixty-four of these were children. From January 1st to November 1st, 1872, 905 cases in which the sex was stated were reported to the Health Board. Of these 484 were males, and 421 females. Dr. Sanderson's statistics of the epidemic in the provinces around the Vistula, the cases being chiefly children, give also but a slight excess of males. Probably, therefore, the sex under the age of puberty makes no difference in the liability to this disease, and the same may be said of all other constitutional affections. Men are more liable than women, only when they lead a more irregular life, and are subject to more privations and exposures.

Age.—Children, as already stated, are much more liable to cerebro-spinal fever than adults. The following are the statistics of the Health Board relating to this point, the cases occurring in 1872:—

Under 1 year	125
From 1 to 5 years	336
“ 5 “ 10 “	204
“ 10 “ 15 “	106
“ 15 “ 20 “	54
“ 20 “ 30 “	79
Over 30 years	71
Total	975

In the statistics which I have obtained of 81 cases occurring in the 20th and 22d wards, the ages were as follows:—

Under 1 year	8
From 1 to 3 years	18
“ 3 “ 5 “	20
“ 5 “ 10 “	17
“ 10 “ 15 “	7
Over 14 years	11
Total	81

It is seen that nearly three-fourths of the whole number of cases in the recent epidemic in New York City were under the age of ten years. The statistics of other epidemics occurring in civil practice is similar. Thus Dr. Sanderson, in examining the mortuary statistics of the epidemic in Germany, ascertained that there had been 218 deaths under the age of fourteen years, and only 17 above that age, and although this does not show the exact ratio of children to adults, in the entire number of cases it is apparent that children greatly preponderated.

The more advanced the age after childhood, the less the liability to this disease ; so that after the middle period of life few cases occur, and after the age of fifty years there is nearly an immunity. The oldest two, of

whose cases I have the record in the recent epidemic, had attained the ages respectively of 47 and 63 years.

Symptoms.—During epidemics of cerebro-spinal fever, we are now and then called to patients who present certain of the characteristic symptoms, but in so transient and mild a form that they are soon restored to health. The fever is said to have aborted. I have met the following cases :—

A boy of eight years, previously well, was taken with headache, vomiting, and moderate febrile movement on April 2d, 1872. The evacuations were regular, and no local cause of the attack could be discovered. On the following day the symptoms continued, except the vomiting, but he seemed somewhat better. On April 4th the febrile movement was more pronounced, and in the afternoon he was drowsy and had a slight convulsion. The forward movement of his head was apparently somewhat restrained. On the 6th the symptoms had begun to abate, and in about one week from the commencement of the attack his health was fully restored.

A boy six years old was well till the second week in May, 1872, when he became feverish, and complained of headache. At my first visit, May 14th, he still had headache, with a pulse of 112. The pupils were sensitive to light, but the right pupil was larger than the left. The bromide and iodide of potassium were prescribed, with moderate counter-irritation behind the ears. The headache and febrile movement in a few days abated, the equality of the pupils was restored, and within a little more than a week from the first symptoms he fully recovered.

Obviously the diagnosis, when symptoms are so mild, must sometimes be doubtful; but as observers in different epidemics report such cases, it seems proper to regard them with perhaps occasional exceptions as genuine, but aborted cases. The epidemic influence acts so feebly on these patients, or their ability to resist it is so great, that they escape with a short and trivial ailment.

Occasionally, also, during the progress of an epidemic, we meet patients who present more or fewer of the characteristic symptoms, but in so mild a form that they are never seriously sick, and never entirely lose the appetite, but the disease, instead of aborting, continues about the usual time.

Thus, on the 4th of January, 1873, I was called to a girl of thirteen years, who had been seized with vomiting followed by headache in the last week in December. During a period of six to eight weeks, or till nearly the first of March, she presented the following symptoms: daily paroxysmal headache, often most severe in the forenoon, neuralgic pain in the left hypochondrium, and sometimes in the epigastric region; pulse and temperature sometimes nearly normal, and at other times accelerated and elevated, both with daily variations; inequality of the pupils, the right being larger than the left during a portion of the sickness. This patient was never so ill as to keep the bed, usually sitting quietly during the day in a chair, or reclining on a lounge, and she never fully lost her appetite. Quinia had no appreciable effect on the paroxysms of pain or fever.

There can, in my opinion, be little doubt that this girl was affected by the epidemic, but so mildly that there was, for a considerable time, much

uncertainty in the diagnosis. Cases like this, in which the disease is so feebly developed, and those in which it aborts, though they deserve recognition, evidently should not be employed in the statistics.

Mode of Commencement.—In all the cases which I have observed, cerebro-spinal fever commenced between 12 M. and 6 A.M., and in the records of cases published by others the time of commencement, so far as I have observed, was between the same hours. The fact that this disease does not commence after the repose of night till several hours of the day have passed, shows the propriety, as we shall see hereafter, of enjoining a quiet and regular mode of life, free from excitement, and with sufficient hours of sleep during the time that the epidemic is prevailing.

Cerebro-spinal fever usually has no premonitory stage, or it is so slight as to escape notice. Exceptionally there are certain premonitions for a few hours or days, such as languor, chilliness, etc. Premonitions occur more frequently in mild than in severe forms of the fever. The ordinary mode of commencement in a typical or somewhat severe case is as follows: The patient has a rigor or chill, or rarely two or three of them at irregular intervals of some hours. One patient, an adult female, had three or four pretty severe chills, the last occurring, from recollection, as late as the fourth day. Children often have clonic convulsions in place of the chill, or immediately after it, partial or general, slight or severe. Apathy, more or less profound stupor, or less frequently delirium succeeds. In the gravest cases semi-coma occurs, from which the patient is with difficulty aroused, or profound coma, which, in spite of prompt and appropriate treatment, may prove speedily fatal. If aroused to consciousness, he now complains of violent headache, with or without, or alternating with equally, severe neuralgic pains in the neck, some part of the trunk, or in one of the extremities. The pupils are dilated, or less frequently contracted, and they respond feebly, or not at all, to light. Often they oscillate, and occasionally one is larger than the other.

Vomiting, with little apparent nausea, is also an early and prominent symptom, evidently having a cerebral origin. It occurred as an initial symptom in 51 of 56 cases observed by Dr. Sanderson. Of 61 cases observed by Dr. Sewall and myself, neither its presence nor absence was recorded in 13 cases, its absence in only 1, and its presence as an early symptom in 48 cases.

Unlike typhus and typhoid fevers the temperature is usually as elevated, and sometimes more so, on the first day than subsequently. Indeed, the highest temperature which I have observed in any case, was only two or three hours after the commencement of the attack in a child of three years, namely a temperature of $107\frac{2}{3}^{\circ}$.

Exceptionally the initial symptoms occur in a more gradual manner, becoming by degrees more severe, so that a few days elapse before they are so pronounced that a clear diagnosis is possible. The febrile movement,

headache, neuralgic pains, lassitude, vomiting, and fretfulness, though pretty uniformly present in the commencement, are not in these cases so severe at this period as to excite any apprehension.

Symptoms Pertaining to the Nervous System.—Pain, already described as an initial symptom, continues during the acute period of the malady. It is ordinarily severe, eliciting moans from the sufferer, but its intensity varies in different patients. Its most frequent seat is the head, where it may be frontal, or occipital. It is described as sharp, lancinating, or boring. It is also common in the neck, especially the nucha, the epigastrium, umbilical and lumbar regions, in one or more of the limbs, and along the spine (rachialgia). It shifts from place to place, but it is commonly more persistent in the head and along the spine than elsewhere. The patient, if old enough to speak, and not delirious or too stupid, often exclaims, Oh my head! from the intensity of his suffering, but after some moments complains equally of pain in some other part, while perhaps the headache has ceased, or is milder. In a few instances the headache is absent, or is slight and transient, while the pain is intense elsewhere. After some days the pains begin to abate, and by the close of the second week they are much less pronounced than previously. Vertigo occurs with the headache, so that the patient reels in attempting to stand or walk. Contributing to the unsteadiness of the muscular movements is a notable loss of strength, which occurs early and increases.

The state of the patient's mind is interesting. It is well expressed in ordinary cases by the term apathy or indifference, and between this and coma on the one hand, and acute delirium on the other, there is every gradation of mental disturbance. Sometimes patients seem totally unconscious of the words or presence of those around them, when it appears subsequently that they understood what was said or done. Delirium is not infrequent, especially in the older children and adults. Its form is various, most frequently quiet or passive, but occasionally maniacal, so that forcible restraint is required. It sometimes resembles intoxication, or hysteria, or it may appear as a simple delusion in regard to certain subjects. Thus one of my patients, a boy of five years, appeared for the most part rational, protruding his tongue when requested, and ordinarily answering questions correctly, but he constantly mistook his mother, who was always at his bedside, for another person. Severe active delirium is commonly preceded by intense headache. In favourable cases the delirium is usually short, but in the unfavourable it is apt to continue with little abatement till coma supervenes.

On account of the pain and disordered state of mind, patients seldom remain quiet in bed, unless they are comatose, or the disease is mild, or so far advanced that muscular movements are difficult from weakness. In severe cases they are ordinarily quiet a few moments as if slumbering, and then aroused by the pain roll or toss from one part of the bed to another.

One of my patients, a boy of five years, repeatedly made the entire circuit of the bed during the spells of restlessness. In mild cases patients lie quiet, usually with their eyes closed, except when disturbed.

All writers record a general hyperæsthesia of the skin. Few patients that are not in a state of profound coma are free from it during the first weeks, and it increases materially the suffering. Frictions upon the surface, and even slight pressure with the fingers upon certain parts, extort cries. Gently separating the eyelids for the purpose of inspecting the eyes, and moving the limbs, or changing the position of the head, evidently increase the suffering, and are resisted. I have sometimes observed such outcries from slowly introducing the thermometer into the rectum, that I was forced to believe that the anal, and perhaps rectal, surface was also hyper-sensitive. The hyperæsthesia has diagnostic value, for there is no disease with which cerebro-spinal fever is likely to be confounded in which it is so great. It is due to the spinal meningitis, and is appreciable even in a state of semi-coma.

Tonic contraction of certain muscles, or groups of muscles, is present in all typical cases. In a small proportion of patients it is absent, or is

not a prominent symptom, namely, in those in whom the encephalon is mainly involved, the spinal cord and meninges being but slightly affected, or not at all. This contraction is most frequent and marked in the muscles of the nucha, causing retraction of the head, but it is also common in the posterior muscles of the trunk, producing opisthotonos, and in less degree in those of the abdomen and lower extremities, and hence the flexed position of the thighs and legs, in which patients obtain most relief. The muscular contraction is not an initial symptom. I have ordinarily first observed it about the close of the second day, but sometimes as early as the close of the first day, and in other instances not till the close of the third day. Attempts to overcome the rigidity, as by bringing forward the head, are very painful, and cause the patient to resist. In young children having a mild form of the fever with little retraction of the head, the



rigidity is sometimes not easily detected. I have been able in these cases to satisfy myself and the friends of its presence, by observing the difficulty with which the head is brought forward on presenting to the patient a tumbler with cold water, which is craved on account of the thirst. The usual position of the patient in bed is with the head thrown back, the thighs and legs flexed, with or without forward arching of the spine (see figure). The muscular contraction continues from three to five weeks, more or less, and abates gradually; occasionally it continues much longer. Through the kindness of Dr. Griswold, of 30th Street, I was allowed to see an infant of seven months in the tenth week of the disease. It exhibited great fretfulness, decided prominence of the anterior fontanelle, probably from intra-cranial serous effusion, and marked rigidity of the muscles of the nucha with retraction of the head.

Paralysis occasionally occurs, but is less frequent than we would be led to expect from the nature of the lesions. It may occur early, but it is more frequently a late symptom. It may be limited to one or two of the limbs, as a leg, or arm and leg, or it may be more general. Thus a man treated by Dr. Law in the Dublin epidemic of 1865 could move neither arms nor legs, and Wunderlich saw a patient who had paralysis of both lower extremities and a considerable part of the trunk. As the paralysis is due to inflammatory processes in the cerebro-spinal axis, it usually disappears in a few weeks as the inflammation abates, and convalescence is established, but it may be more protracted. Thus in Wunderlich's case there was only partial recovery after the lapse of five months.

Digestive System.—The tongue is ordinarily lightly covered with a whitish fur. Occasionally in cases attended with great prostration the fur is dry and brown, but only for a few days, when the moist whitish fur succeeds. The habitual brownish and dry fur on the tongue, and sordes upon the teeth, so common in typhus and typhoid fevers, are seldom observed in uncomplicated cases of this disease. Vomiting, which I have described as an initial symptom, usually ceases in a few hours, or not till the lapse of several days, and it frequently recurs at intervals during the periods of recrudescence, which are common in the progress of the fever. It occurs with little effort, often like a regurgitation, as is common when this symptom has a cerebral origin. The ejecta consist at first of the contents of the stomach, and afterwards partly of bile. It does not differ as a symptom from the vomiting which is so common in sporadic meningitis, having a similar origin in a sensation of faintness or depression referred to the epigastrium.

The appetite is poor or entirely lost during the active period of the malady, and it is not fully restored till convalescence is well advanced. On account of the imperfect nutrition, patients progressively waste, and when the case is protracted there is always notable emaciation. Thirst, already alluded to, and more or less constipation are common, but the latter readily

yields to purgatives. On the other hand diarrhœa sometimes precedes and accompanies the disease. I observed this in a few instances in 1872, when the weather had become warm. The patients were young children.

Pulse.—The pulse in children is constantly accelerated. Even in mild cases it is rarely below 100 per minute, and its ordinary range is from 112 to 160. I have seventy-five recorded observations of the pulse in children who recovered, taken before there was any decided improvement. The maximum pulse in these observations was 168 per minute, which was on the first day; the minimum 82, and the average 123. The more severe and dangerous the attack, the greater the frequency of the pulse, unless occasionally in the comatose state. But even in profound coma the pulse was in my observations accelerated, and as death drew near, however great the stupor, it was progressively more frequent and feeble. Intermissions in the pulse do not seem to be as frequent as in sporadic meningitis. The pulse is liable to daily variations in frequency which occur suddenly and without appreciable cause. The following consecutive enumerations of the pulse in four favorable cases which I have selected as typical will give an idea of these variations:—

1st case, an infant of 14 months, 168, 120, 108, 120, 140, 150, 136, 128, 120.

2d case, an infant of 2 years, 136, 152, 130, 132, 136, 140, 152, 140, 136, 148.

3d case, a boy of 6 years, 120, 120, 88, 84, 92, 124, 128, 120.

4th case, a girl of 4 years, 116, 100, 124, 116, 120, 136, 140, 128, 128, 104.

I have preserved observations of this symptom made daily in nine fatal cases, and these show similar fluctuations in the frequency of the heart's contractions. The patients were children, all dying comatose. The maximum pulse in these observations was 204, which was on the first day; the minimum 88, and the average 140. The following are the consecutive enumerations of the pulse usually made twice daily in two of these cases. It will be seen that there was not only greater frequency of the pulse, but fluctuations from day to day similar to those in the favorable cases:—

1st case, age 8 months, 204, 164, 116, 160, 164.

2d case, age 2 years 8 months, 192, 168, 200, 152, 160.

In most inflammatory and febrile diseases exacerbations commonly occur in the latter part of the day, but in this disease they do not seem to be influenced by the time of day, so that sometimes the temperature is highest and pulse most frequent in the morning, sometimes in the evening, and then again at midday.

In favorable adult cases the pulse often remains under 100, and in certain patients it scarcely has more than the normal frequency, but if the type is severe it rises to 110, 120, or over. In the adult, as in the child, as death approaches, the pulse becomes more and more frequent and feeble, and it seldom even in the most asthenic cases has the fulness and force observed in idiopathic inflammations.

Temperature.—Certain of the older observers before the day of clinical

thermometry asserted that the temperature is not increased. North remarked as follows: "Cases occur, it is true, in which the temperature is increased above the normal standard, but these are rare," and Foot and Gallop made similar statements. I am surprised also that some of the recent writers state that febrile movement is often absent. Thus, in a well-written American treatise bearing the date 1873, it is stated "that febrile symptoms do not necessarily belong to epidemic cerebro-spinal meningitis as a substantive disease, for it may and not unfrequently does occur without exhibiting any such symptoms." (Lidell.)

I have no doubt from the nature of cerebro-spinal fever, and from thermometric examinations, which I have made now in more than fifty cases, that there is always an elevation of the internal temperature above the normal standard during the active period of the disease. I have never observed a temperature of less than $99\frac{1}{2}^{\circ}$ if the examination were made within the first fourteen days, and the reason that certain other observers state differently is probably because they have taken the temperature of the cutaneous surface, which is very fluctuating and is often much below that of the blood. The temperature should be ascertained *per rectum*, where it corresponds pretty nearly with that of the blood. In one instance I supposed that I had met a case in which the temperature was not elevated, and I cite it as showing the liability to error in the thermometric examinations of these cases: A female patient, forty-seven years old, three days' sick and comatose, whom I was allowed to examine with the family physician, exhibited no elevation of temperature when the instrument was placed in the mouth and in the axilla, but on introducing it into the rectum it rose to $99\frac{1}{2}^{\circ}$.

The internal temperature, although uniformly elevated, undergoes greater and more sudden variations than occur in any other febrile or inflammatory disease. These fluctuations, which correspond with similar changes in the pulse, are observed during the different hours of the same day. I have in the statistics of my practice 146 observations of the temperature in 35 patients taken before the close of the second week. The highest I have already stated in speaking of the mode of commencement, namely $107\frac{2}{5}^{\circ}$ in a child of two years. It fell a little subsequently, but rose again on the third day to 107° , when she died. In two other cases the temperature was 106° on the first day, and it did not afterwards reach so high an elevation. One of these died on the ninth day, and the other in the ninth week. The next highest temperature was $105\frac{4}{5}^{\circ}$, also on the first day in an infant of eight months, who died on the ninth day. The first and last of these cases occurred in the same wooden tenement-house in the suburbs of the city and upon an elevated outcropping of rock. Wunderlich has recorded a temperature of 110° in one or two cases, but so great an elevation must be very rare in this disease, and is of course prognostic of an unfavourable ending.

The external temperature undergoes similar but greater fluctuations, rising above and falling below the normal standard several times in the course of the same day. Similar fluctuations occur in sporadic meningitis, but they are much less pronounced. The more grave the case in those not comatose, the greater these variations. The following is a common example: the patient was two years old, and the case was one of considerable severity. The observations were made at four consecutive visits during the first week. The internal temperature varied from $101\frac{1}{2}^{\circ}$ to $104\frac{1}{5}^{\circ}$ as the extremes, while that of the fingers and hand at the first examination was $90\frac{1}{2}^{\circ}$, at the second 90° , at the third 103° , and at the fourth 83° . Thus the temperature of the extremities at the first and second examinations was about 8° below that of health, while at the third examination it had risen 13° , so as nearly to equal the internal temperature, and at the fourth examination it had again fallen 20° , or $15\frac{1}{2}^{\circ}$ below the normal standard. The patient recovered. These sudden and great variations in the pulse and temperature have considerable diagnostic value in obscure and doubtful cases.

Respiratory System.—The symptoms which are referrible to the respiratory apparatus are for the most part quite subordinate except when an inflammatory complication occurs. The respiration in uncomplicated cases is quiet and easy, and a cough if present is usually slight and accidental. Intermittent, sighing, or irregular respiration is less frequent in cerebro-spinal fever than in sporadic meningitis, but it does occur. In ordinary cases the respiration is somewhat accelerated, but without any marked disturbance in its rhythm. In 31 observations in children who had the disease without complication, I found the average respirations 42 per minute, while the average pulse was 137. It is seen therefore that the respiration as compared with the pulse was proportionately more frequent than in health. This appears to be due to the fact, that certain muscles, which are concerned in respiration, as the abdominal and perhaps others, are embarrassed in their movements by the tonic contractions. In cases of pulmonary congestion, œdema, or inflammation, of course, the symptoms of this affection are superadded to those of the primary disease.

Cutaneous Surface.—The features may be pallid, of normal appearance, or flushed in the first days of the disease; but in advanced cases they are pallied, as is the skin generally. A circumscribed patch of deep congestion often appears, as in sporadic meningitis, upon some parts of them, as the cheek, forehead, and ear, and after a short time disappears. Friction for a moment upon any part of the surface, when the temperature is not reduced, produces the same appearance, a fact to which Trousseau and others have called attention as regards sporadic meningitis.

The following are the abnormal appearances of the skin which I have most frequently observed: 1st, Papilliform elevations, due to contraction of the muscular fibres of the corium, namely the so-called goose-skin. This

is not uncommon in the first weeks. 2d, A dusky mottling, also common in the first and second weeks, in grave cases, and most marked where the temperature is reduced. 3d, Numerous minute red points over a large part of the surface, bluish spots a few lines in diameter due to extravasation of blood under the cuticle, resembling bruises in appearance, and large patches of the same color, an inch or more in diameter, less common than the others, and usually not more than two or three upon a patient. These last I believe from certain observations are sometimes the result of bruises, which the patients receive during the spells of restlessness. 4th, Herpes. This is common. It sometimes occurs as early as the second or third day, but in other instances not till towards the close of the first week or in the second. The number of herpetic eruptions varies from six or eight to a dozen or more. This affection evidently has a neuropathic origin, the vesicles occurring chiefly on those parts of the surface which are supplied by branches of the fifth pair of nerves. Its most common seat is upon the lips, but I have occasionally observed it upon the mucous membrane of the nasal and buccal surfaces, upon the cheek, around the ears and upon the scalp.

During the first days the skin is apt to be dry. Afterwards perspirations are not unusual, and free perspirations sometimes occur especially about the head, face, and neck. The quantity of urine excreted is normal, or it may be in excess of the normal amount. It occasionally contains a moderate amount of albumen, and in exceptional instances cylindrical casts and blood corpuscles. A deposit of urates in the urine is not infrequent, but this so often occurs in inflammatory and febrile diseases, that it is of little moment.

Arthritic inflammation, apparently of a rheumatic character, has been occasionally observed in most epidemics. It is commonly slight, producing merely an cedematous appearance around one or more joints. Thus, in one case, which came under my notice, and which was subsequently fatal, the parents, who were poor, and were therefore without medical advice till the case was somewhat advanced, had already diagnosticated rheumatism on account of puffiness, which they had noticed around one of the wrists.

The organs of the special senses are more or less involved in most cases, and the eye and ear are not infrequently the seat of serious lesions. Taste and smell are rarely affected so far as known, but it is possible that they may sometimes be perverted or even temporarily lost during the time of greatest stupor. In one case at least the smell in one nostril was entirely lost. The affections of the eye and ear are the most important and interesting of those of the special senses. Strabismus is common. It may occur at any period of the fever, continuing a few hours or several days, and it may appear and disappear several times before convalescence is established. Occasionally it continues several weeks, but with few exceptions the parallelism of the eyes is finally restored. In a boy of five

years, whom I last saw three months after convalescence, there was still convergent strabismus of the right eye and double vision.

Changes in the pupils are among the first and most noticeable of the initial symptoms, as I have already stated in describing the mode of commencement. These are dilation, less frequently contraction, oscillation, inequality of size, feeble response to light, etc. Most patients present one or more of these abnormalities of the pupils, and they continue during the first and second weeks, and gradually abate, as the condition of the patient improves. Inflammatory hyperæmia of the conjunctiva often occurs. It commences early, and now and then, the conjunctivitis is so intense, that considerable tumefaction of the lids occurs, with a free muco-purulent secretion. The false diagnosis has indeed been made of purulent ophthalmia, in cases in which this affection of the lids was early and severe. But such intense inflammation is quite exceptional. More frequently, there is an uniform diffused redness of the conjunctiva, not so dusky as in typhus, and the injected vessels can not be so readily distinguished as in that disease.

In certain cases, almost the whole eye (all, indeed, of the important constituents) becomes inflamed; the media grow cloudy, the iris discolored, and the pupils uneven, and filled up with fibrinous exudation. The deep structures of the eye cannot, therefore, be readily explored by the ophthalmoscope, but they are observed to be adherent to each other, and covered by inflammatory exudation. They present a dusky red, or even a dark colour, when the inflammation is recent. Exceptionally, the cornea ulcerates, and the eye bursts, with a loss of more or less of the liquids, and shrinking of the eye. But ordinarily no ulceration occurs, and as the patient convalesces, the œdema of the lids, hyperæmia of the conjunctiva, the cloudiness of the cornea, and of the humours, gradually abate, and the exudation in the pupils is absorbed. The iris bulges forward, and the deep tissues of the eye, viewed through the vitreous humour, which before had a dusky red color from hyperæmia, now present a dull white color. The lens itself, at first transparent, after a while becomes cataractous. Sight is lost, totally and forever. This form of ophthalmia is sometimes rapidly developed, as in the following example:—

On July 5th, 1873, I was called to a boy, five years of age, who had reached the tenth day of cerebro-spinal fever without apparently any affection of the eyes, as both presented the normal appearance. On the following day the left eye was red and swollen from the inflammation and chemosis, so that the lids could not be closed, and the media were cloudy. Death occurred on the same day.

If the patient live, the volume of the eye diminishes, as the inflammation abates to less than the normal size, even when there has been no rupture, and divergent strabismus is apt to occur. Prof. Knapp, whose description of the eye I have for the most part followed, says: "The nature of the eye affection is a purulent choroiditis, probably metastatic." Fortunately

so general and destructive an inflammation of the eye, as has been described above, is comparatively rare. On the other hand, conjunctivitis of greater or less severity, and hyperæmia of the optic disk, consequent on the brain disease, are not unusual, but they subside, leaving the function of the organ unimpaired.

Inflammation of the middle ear of a mild grade, and subsiding without impairment of hearing, is common. The membrana tympani, during its continuance, presents a dull yellowish, and in places a reddish, hue. Occasionally a more severe otitis media occurs, ending in suppuration, perforation of the membrana tympani, and otorrhœa, which ceases after a variable time. But otitis media is not the most severe affection of the sense of hearing. Certain patients lose their hearing entirely and never regain it, and that too, with little otalgia, otorrhœa, or other local symptoms, by which so grave a result can be prognosticated. This loss of hearing does not occur at the same period of the disease in all cases. Some of those who become deaf are able to hear as they emerge from the stupor of the disease, but lose this function during convalescence, while the majority are observed to be deaf as soon as the stupor abates and full consciousness returns.

Two important facts have been observed in reference to the loss of hearing in these patients, namely, it is bilateral and complete. When first observed it is sometimes complete, but in other instances it is partial, and when partial it gradually increases till after some days or weeks, when it becomes complete. I have the records of ten cases of this loss of hearing, or about one in ten of the total number of cases, which have either come under my observation, or have been reported to me by physicians in whose practice they occurred. One was a young lady and the others children under the age of ten years. Prof. Knapp has examined thirty-one cases. "In all," says he, "the deafness was bilateral, and with two exceptions, of faint perception of sound, complete. Among the twenty-nine cases of total deafness there was only one who seemed to give some evidence of hearing afterwards."

One theory attributes the loss of hearing to inflammatory lesions, either at the centre of audition within the brain, or in the course of the auditory nerves before they enter the auditory foramina. Thus Stillé says: "This symptom appears to depend chiefly upon the pressure of the plastic exudation in which the nerves are imbedded." The other theory attributes the loss of hearing to inflammatory disease of the ear, and especially of the labyrinth. Dr. Sanderson, who is an advocate of this latter theory, remarks as follows: "As regards the nature of the affection, there appears to be good reason for believing that, like the blindness observed under similar circumstances, and sometimes in the same cases, it is dependent on inflammatory changes in the organ of hearing itself. Dr. Klebs was kind enough to show me in the pathological museum of the Charité, at Berlin,

a preparation of the internal ear of a soldier who had died of epidemic meningitis complicated with deafness, in which fibrinous adhesions existed between the bones of the internal ear and the walls of the vestibule. Dr. Klebs stated that in the recent state the mucous lining of the vestibule was detached." In the case of a young woman who was deaf from the commencement and died on the eighth day, "both tympana were natural, but in the left membrana tympani was found a dense white thickening as large as a pin's head. On the same side the lining membrane of the semi-circular canals was distinctly thickened and loosened, and in the anterior canal there were semi-fluid purulent masses." Professor Knapp also states: "The nature of the ear disease is, in all probability, a purulent inflammation of the labyrinth." According to him no disease of the middle ear could cause such complete deafness, and, as evidence that the deafness is not due to central disease, Dr. Gruening obtained by electrization the normal reaction of the auditory nerve within the cranium. Moreover, if the lesion which destroys hearing is within the cranium, why is not the function of the other cranial nerves also abolished. Drs. Keller and Lucae have also, in three post-mortem examinations, found evidences of disease of the labyrinth.

An argument in support of the former of these theories is the fact, that the lesion which produces the deafness is not ordinarily attended by any marked subjective symptoms referable to the ear as otalgia, etc. Again, the fact that the deafness is always bilateral and simultaneous in the two ears, comports better with the doctrine of a central lesion than with that which locates the lesion in the ear. But the true theory can only be positively established by dissections, and as we have seen, several post-mortem examinations have revealed inflammatory disease of the labyrinth in those who have died having this form of deafness, while in no case, so far as I am aware, has the ear been found free from inflammatory lesions. Therefore, the theory which ascribes the deafness to disease of the ear is much better established than the other, and in the present state of our knowledge we must accept it. Moreover, most of the aurists of this city, who have had excellent opportunities to examine these cases, believe in this theory.

Nature.—If we examine the literature of cerebro-spinal fever, we will find that three theories relating to its nature have been advocated; one that it is a local disease, occurring epidemically; the second, that it is akin to typhus fever, or is a form of it; and the third, that it is a disease *sui generis*.

The first theory, that it is an epidemic local disease, once had many adherents, but it is now nearly discarded. Job Wilson, in 1815, considered it a form of influenza, and he could discern no utility in drawing a distinction between spotted fever and influenza. We, in this day, can see no resemblance between the two, except that they are both pandemics.

A more plausible view is, that it is merely an epidemic inflammation of the cerebral and spinal meninges. Even Niemeyer says that it presents no symptoms except such as are referable to the local affection. But a moment's thought will show us that cerebro-spinal fever differs as widely from simple meningitis, as scarlet fever with its pharyngitis differs from idiopathic pharyngitis. Cerebro-spinal fever begins abruptly, usually in those with previous good health; and its initial symptoms, we have seen, are severe; while sporadic meningitis ordinarily occurs in those of feeble or failing health, with an insidious approach, and with gradually increasing symptoms. And though the two diseases have many symptoms in common, they differ in others. Scantiness of the urine, dryness of the skin, and retraction of the abdomen, are observed in sporadic meningitis, while a normal or increased amount of urine, a normal or even rounded fulness of the abdomen, and often, also, perspiration, are symptoms of cerebro-spinal fever. The two diseases differ also strikingly as regards the periods of greatest danger and the prognosis; but the conclusive proof that the disease of which we are treating is not a local affection, but constitutional, with local manifestations, is found in the fact of a constant and early blood change, which in all severe cases is manifested by the appearance of the skin, and in other ways.

Cerebro-spinal fever differs widely in many particulars from typhus, although it is probable that it was confounded with it previously to the present century, and many even now consider it a form of that disease. Their theory is, that from some unknown cause or influence the poison of the constitutional disease acquires for the time an affinity for the great nervous centres, producing their congestion and inflammation, just as that of scarlet fever causes a pharyngitis, and if we could detach from it these local manifestations, we would have a malady which differs but little, if at all, in its clinical history and nature, from typhus.

The following are some of the differences which, in my opinion, not only establish the non-identity of these two fevers, but show that there is no close relationship between them. The causes of typhus are determined. Crowding, personal uncleanness, and imperfect ventilation are sufficient to produce it in any season or climate. Such is not the case with cerebro-spinal fever. The most that can be said of the agency of these and similar anti-hygienic conditions in causing this fever is, as we have already stated, that they produce deterioration in the tone of the system, so that it is less capable of resisting the prevailing epidemic influence. The cause of cerebro-spinal fever occurs independently of the usual conditions of life and is present or operative only at long intervals; else the epidemic would not be so rare. Typhus is highly contagious; cerebro-spinal fever is not contagious, or is feebly so. Typhus is rare under the age of ten years, and is most frequent in youth and manhood, while the reverse is true of cerebro-spinal fever. Typhus commences with mild or

moderately severe symptoms, which increase in severity day by day, and the period of greatest danger is therefore at an advanced stage of the disease. Contrast this with the violence of the initial symptoms of cerebro-spinal fever, and the fact that the first and second days are most perilous. Moreover, typhus does not seem to be more prevalent during epidemics of cerebro-spinal fever, than at other times.

If we pass over those many symptoms due to lesions of the cerebro-spinal axis, which are present in cerebro-spinal fever, but are absent in typhus fever, there are other points of dissimilarity which cannot be satisfactorily explained, except on the supposition of an essential difference in the two diseases. The sordes on the teeth and gums, dry and brown fur upon the tongue, peculiar mouse-like odour, and more definite duration of typhus, are points of contrast with cerebro-spinal fever. Moreover, and as, in my mind, very conclusive evidence of the non-identity of typhus and cerebro-spinal fever, that common lesion of the former, namely, enlargement and softening of the spleen, is seldom present in the latter. The spleen has usually been found normal or moderately congested in most post-mortem examinations of cerebro-spinal fever.

Where, therefore, should cerebro-spinal fever be placed in the catalogue of diseases? It resembles scarlet fever in the suddenness and violence of its onset; sporadic meningitis on the one hand, and typhus on the other, as we have seen, in many of its symptoms; influenza and cholera, in the infrequency of its visitations, and its pandemic nature. But the particulars in which it differs from these diseases are more numerous and important than those in which it resembles them. Like a rare object in nature, which naturalists are not able to classify with others on account of dissimilarities, though it has its resemblances to more than one, cerebro-spinal fever appears to stand alone, as a peculiar constitutional disease, having a peculiar but obscure cause, and a dangerous manifestation or expression located in the cerebro-spinal system.

Prognosis.—Cerebro-spinal fever is justly one of the most dreaded of the epidemic diseases, on account of the great mortality which attends it, and the fact that those who survive are often left with some incurable ailment. The following are the statistics of fifty-two cases, most of which occurred in my own practice, and the rest I visited in consultation; twenty-six were cured and twenty-six died. Sixteen of the twenty-six who died were profoundly and hopelessly comatose within the first seven days, most of them dying within that time, and some even on the first and second days, while others lingered into the second week and died without any sign of returning consciousness. These statistics therefore show, and the same is true of the statistics of other observers, that the first week is the time of greatest danger, and if no fatal symptoms are developed during this week recovery is probable. Only three deaths occurred after the twenty-first day, one from purpura hemorrhagica, the hemorrhages taking

place from the mucous surfaces, and the other two after a sickness of more than two months, in a state of extreme emaciation and prostration. In these last cases muscular tremors and convulsions preceded death. The ten who subsequently died, but did not become comatose during the first week, were nevertheless seriously sick from the first day, but there was hope and some expectation of a different issue till near death.

There is probably no disease which falsifies the predictions of the physician more frequently than this. This is due partly to the severity of the cerebral symptoms in the commencement, which, did they occur in the common forms of meningitis, with which he is more familiar, would justify an unfavourable prognosis, and partly to the remissions and exacerbations, the occurrence alternately of symptoms of apparent convalescence and recrudescence, or relapse, which characterizes the course of this disease. Grave initial symptoms, which might seem to have a fatal augury, are often followed by such a remission, that all danger seems past, and in a few hours later perhaps the symptoms are nearly or quite as grave as at first.

Under the age of five years, and over that of thirty, the prognosis is less favorable than between these ages. An abrupt and violent commencement, profound stupor, convulsions, active delirium, and great elevation of temperature are symptoms which should excite solicitude, and render the prognosis guarded. If the temperature remain above 105° death is probable, even with moderate stupor. Numerous and large petechial eruptions show a profoundly altered state of the blood, and are therefore a bad prognostic, and so is continued albuminuria, as it indicates great congestion of the kidneys, associated probably with other internal congestions. In one case, a boy, which I had an opportunity of examining nearly a year after the attack, the kidneys were still affected. There was anasarca of the face and extremities with albuminuria. The renal congestion had apparently degenerated into a chronic Bright's disease. The result of the case I have not ascertained. Profound stupor, though a dangerous symptom, is not necessarily fatal as long as the patient can be aroused to partial consciousness, and the pupils are responsive to light. So long as it does not pass into actual coma, it is less dangerous than active or maniacal delirium, which is apt to eventuate in this coma.

A mild commencement, with general mildness of symptoms, as the ability to comprehend and answer questions, moderate pain and muscular rigidity, some appetite, moderate emaciation, little vomiting, etc., justifies a favourable prognosis, but even in such cases it should be guarded till convalescence is fully established.

Death in the first stages of cerebro-spinal fever appears to occur ordinarily from coma, but we will see from the lesions that congestion of the posterior portions of the lungs is frequent, and Sanderson says :—

"In all the fatal cases which came under my notice, the most prominent symptoms, which preceded death, were those which indicate impairment and perversion of the respiratory functions. As the breathing became more hurried and difficult, the general depression became more intense, the pulse became weaker and quicker, and the temperature of the skin more elevated."

He cites the case of a child, who died in that way but was at the same time comatose. In more protracted cases in which there is softening of portions of the cerebro-spinal axis, or fibrino-purulent collections around it, which are not absorbed, death may occur either from convulsions and coma or from exhaustion. We have already alluded to one case in which purpura hemorrhagica was developed and the child was exhausted by the hemorrhages.

Those who fully recover often exhibit symptoms usually of a nervous character, as irritability of disposition, headaches, etc., for months after convalescence is established.

Diagnosis.—Cerebro-spinal fever, on account of the nature and severity of its symptoms and the suddenness of its onset, may be mistaken for scarlatina, and *vice versa*. In one instance, to my knowledge, this mistake was made. High febrile movement, vomiting, convulsions, and stupor are common in the commencement of scarlet fever, and we have seen that the same symptoms ordinarily usher in the severer forms of cerebro-spinal fever. It will aid in diagnosis to ascertain whether there is redness of the fauces, for this is present in the commencement of scarlet fever, and in a few hours later the characteristic efflorescence appears upon the skin.

The diagnosis of cerebro-spinal fever from the common forms of meningitis is ordinarily not difficult, for while in the former there is the maximum intensity of symptoms on the first day, in the latter there is a gradual and progressive increase of symptoms from a comparatively mild commencement. Moreover cases of ordinary or sporadic meningitis occurring at the age when cerebro-spinal fever is most frequent, are commonly secondary, being due to tubercles, caries of the petrous portion of the temporal bone, or other lesion, and there are therefore in these cases preceding and accompanying symptoms, which are directly referable to the primary disease. We have seen how different the case is with cerebro-spinal fever, which in most patients begins abruptly in a state of previous good health. Again in cerebro-spinal fever, after the second or third day, hyperæsthesia, retraction of the head, and other characteristic symptoms occur, which are either not present, or are much less pronounced, in ordinary meningitis. The symptoms of hysteria sometimes bear a close resemblance to the delirium observed in certain cases of cerebro-spinal fever. But the thermometer enables us to make the diagnosis, for in hysteria there is no febrile movement. In our remarks on the nature of cerebro-spinal fever we have sufficiently described the differences between this disease and typhus.

Anatomical Characters.—The following notes of 76 fatal cases,

arranged in four series, according to their duration, show the lesions observed :—

SERIES I.—Cases fatal within three days.

CASE 1. Male, æt. 18 years; duration three days. Brain generally congested; “puncta vasculosa” numerous; increase of liquid in third, fourth, and lateral ventricles; liquid turbid, and containing fibrin; meninges hyperæmic; fluid in meshes of pia mater; fibrinous exudation along optic nerves and base of cerebellum; increased quantity of spinal fluid; some fibrinous exudation on anterior, but more on posterior, surface of cord, especially in dorsal and lumbar regions. Bellevue Hospital Records, March 20, 1872.

CASE 2. Male, adult; duration thirty hours. Fibrinous exudation under arachnoid, most abundant over posterior lobes of cerebrum, at base of the brain, and on medulla oblongata; dura mater (meninges?) congested; \S ij or \S iv of turbid serum in pericardium. American Medical Times, April 30, 1864, Wm. Frothingham, M.D.

CASE 3. Æt. 16 months; duration fourteen hours. \S j of serum in ventricles; general turgescence of vessels of meninges with dark blood; pleuræ and the peritoneum covering stomach and liver injected; numerous star-like points of extravasated blood on external and internal surfaces of stomach, superior part of intestines, upon the diaphragm, and thoracic organs. Dr. Gallop, History of Spotted Fever in Vermont, 1811.

CASE 4. Æt. 12 years; duration twelve hours. Brain congested; slight increase of liquid in ventricles; meninges congested; lungs dark and congested. History of Spotted Fever in Vermont, 1811; communicated to Dr. Gallop by Dr. Bowen.

CASE 5. Male, æt. 30 years; duration three days. Numerous “puncta vasculosa” in brain; ventricles nearly empty, and their walls apparently healthy; choroid plexus not injected; all the meninges injected; a grayish-white exudation in nearly all the intergyral spaces, but most abundant near the longitudinal suture; pons Varolii, chiasm, upper end of medulla, and inferior surface of posterior lobes also covered with exudation; spinal dura mater hyperæmic, and its internal surface minutely injected; anterior aspect of cord nearly normal, except purulent-looking matter over cauda equina; firm exudation over entire posterior surface of cord below the upper dorsal region; cord itself apparently healthy; posterior portions of lungs infiltrated with bloody serum; a few soft, dark clots in right ventricle of heart; liver and spleen hyperæmic, and the latter soft. Burdon-Sanderson, Report on Cerebro-spinal Meningitis.

CASE 6. Male, æt. 10½ years; duration five hours. Turbid serum in ventricles; arachnoid over convex surface of brain cloudy and without lustre; thin purulent-appearing liquid in meshes of pia mater, greenish in places; turbid serum at base of brain; pia mater very vascular; arachnoid at base of brain healthy; spinal pia mater hyperæmic; blood everywhere fluid; right side of heart engorged, and lungs congested. Samuel Gordon, M.D., Dublin Quarterly Journal, 1866.

CASE 7. Male, æt. 15 years; duration one day. Turbid liquid in ventricles; choroid plexus injected; entire pia mater injected; discolored liquid in sub-arachnoid space similar to that in ventricles, not containing any appreciable quantity of pus or fibrin; spinal pia mater injected; blood fluid; lungs congested; right side of heart distended with blood. Ibid.

CASE 8. Female, æt. 21 years; duration three days. Brain congested and softened; meninges injected; effusion of serum underneath them; fibrinous exudation along longitudinal fissure; effusion of serum under meninges; blood dark and partially coagulated; serous effusion in pericardial and peritoneal sacs; a small amount of fibrin upon descending colon, ovaries, and uterus (died

six days after her confinement). W. H. H. Githens, M.D., *American Journal of the Medical Sciences*, July, 1867.

CASE 9. Male, adult; duration one day. Cranial sinuses distended with fluid blood; meninges injected at base of brain; shreds of fibrin about pons Varolii, and upper part of medulla oblongata; all the great vessels of the chest distended with blood; a large amount of fluid in pericardium; right cavities of heart distended with clots; liver and kidneys enlarged and the latter engorged. Dr. Haverty, *Dublin Quarterly Journal*, 1867.

CASE 10. Male, æt. 18 years; duration less than one day. Brain slightly congested but otherwise normal; exudation in ventricles containing apparently both fibrin and pus; exudation of fibrin and pus at base of brain and cerebellum; congestion and spots of apparent extravasation of blood in posterior portions of lungs; fibrinous coagula in both ventricles of the heart; spleen and liver enlarged and hyperæmic. Dr. J. B. Upham, *Boston Medical and Surgical Journal*, vol. lxviii.

CASE 11. Male, æt. 32 years; duration two days. Brain substance normal; fibrino-purulent exudation in ventricles thicker than that over exterior of brain; engorgement of meningeal vessels; a thin exudation of fibrin and pus over superior surface of brain and at its base, between the lobes of the cerebellum, about the origin of the nerves, and upon the surface of the medulla oblongata; lungs moderately congested, especially posteriorly; pericardium injected and fibrinous exudation upon its surface; dark fluid blood in ventricles of heart; spleen enlarged and slightly softened; one or two of Peyer's patches slightly raised; other organs normal. *Ibid.*

CASE 12. Male, æt. 21 years; duration three days. Ventricles distended by an opaque liquid having a deposit apparently purulent; a fibrino-purulent exudation over the base of the cerebellum and around the origin of the nerves of sense; $\frac{3}{4}$ of fluid in pericardium; right lung congested; left lung small from former disease; liver of normal appearance but inter-lobular veins congested; Peyer's patches slightly enlarged and prominent; spleen and other organs normal. *Ibid.*

CASE 13. Male, æt. 20 years; duration two days. Fibrin in the posterior part of lateral ventricles, and also a fungoid growth at floor of each ventricle; brain covered with a layer of fibrin permeating the pia mater in every part; exudation about the base of cerebellum, medulla oblongata and the origin of the nerves of special sense; spinal cord apparently healthy, examined to the extent of three inches; lungs congested and liver also in less degree; cavities of heart contained firm coagula; spleen large and softened. *Ibid.*

CASE 14. Male; duration three days. Vessels of pia mater engorged; fibrin in the intergyral spaces of cerebral hemispheres; also over the pons Varolii and medulla oblongata; spinal pia mater injected and exudation near the lower dorsal vertebræ. *Ibid.*

CASE 15. Male, æt. 18 years; duration thirty-six hours. Brain congested; $\frac{3}{4}$ of yellow fluid in ventricles, choroid plexus injected; meninges highly injected; adhesion of dura mater to skull along longitudinal sinus; evidences of inflammation over entire cord; turbid serum in lower part of spinal canal. *Ibid.*

CASE 16. Male, æt. 40 years; duration five and a half hours. Brain congested; $\frac{3}{4}$ of serum in ventricles; sinuses and meningeal vessels engorged with fluid blood; $\frac{3}{4}$ of fluid blood escaped when the calvarium was removed; spinal cord apparently healthy; lungs congested; $\frac{3}{4}$ of serum in pleural cavities; $\frac{3}{4}$ of fluid in pericardium; tricuspid valve thickened; urine albuminous and kidneys congested; other organs normal; blood dark and without coagulation. John A. Lidell, *Treatise on Apoplexy*, page 331.

CASE 17. Male, æt. 28 years; duration twenty-four hours. Vessels of cerebrum, cerebellum, pons Varolii and medulla oblongata congested; moderate

amount of serum in ventricles; at least $\frac{3}{4}$ of serum escaped from cranial cavity; a moderate amount of limpid serum over vertex and under arachnoid; arachnoid somewhat opaque; spinal arachnoid opaque and pearl colored; the theca vertebralis distended with serum, which contained a few fibrinous flocculi; acute hyperæmia of subarachnoid vessels; substance of cord normal; both lungs congested, and extravasated blood in right middle lobe; kidneys greatly congested and of a dark red color; amber-colored urine loaded with albumen in the bladder; blood more fluid than normal. *Ibid.*

CASE 18. Male, æt. 17 years; duration thirty-six hours. Brain apparently normal, convolutions flattened; no effusion in ventricles; arachnoid dry; pia mater opaque and infiltrated with pus; spinal like the cerebral pia mater infiltrated with pus; substance of cord apparently normal; spleen somewhat enlarged. Dr. Ellis, Boston Medical and Surgical Journal, June 9, 1864.

CASE 19. Male, æt. 7 years; duration eleven hours. Bloody serum in ventricles; a layer of extravasated blood over brain, extending to the base. Dr. Sewall, New York Medical Times, July 1, 1872.

CASE 20. Male, æt. 11 years; duration eighteen hours. Brain substance greatly congested but its consistence normal; ventricles nearly dry; cranial sinuses and meningeal vessels distended with blood; no purulent or fibrinous exudation observed in any part; spots of extravasation in mucous membrane of stomach, also under peritoneal covering of stomach and intestines; blood everywhere dark and fluid. *Ibid.*

CASE 21. Æt. 15 months; duration nine hours. Ventricles normal; cerebral meninges injected; lungs congested; unusual amount of serum in pericardium; blood apparently normal. *Ibid.*

CASE 22. Female, æt. $4\frac{1}{2}$ years; duration twenty-three hours. Brain somewhat softer than normal; ventricles empty; sinuses, meninges, and superficial vessels of brain injected; turbid serum at base of brain; blood everywhere fluid; petechial spots on peritoneum; liver congested, but other organs of the trunk normal; Peyer's patches prominent. *Ibid.*

CASE 23. Female, æt. 14 years; duration two days. Increase of fluid in ventricles; cerebral meninges injected; fibrin and pus in meshes of pia mater; purulent liquid escaped from the cranial cavity; spinal meninges congested but more over anterior than posterior aspect of the cord; pus and fibrin lying over the entire surface of the cord; right lung engorged; kidneys congested; spleen normal. Charity Hospital, April 9, 1872.

CASE 24. Male, æt. 14 years; duration three days. Vessels of brain engorged with blood and brain substance much softened (autopsy seven hours after death); cerebral meningeal vessels filled with dark blood and pus along the course of the vessels; great extravasation of blood outside of spinal dura mater; congestion of lungs and hypostatic pneumonia; a large amount of fluid in pericardium; stomach and intestines normal; spleen mottled; liver and kidneys congested. *Ibid.*, April 20, 1872.

CASE 25. Male, æt. 11 years; duration three days. Convolutions flattened; brain substance of nearly normal color; lower part of middle lobes of both hemispheres, a considerable part of corpus callosum, and the right corpus striatum softened; $\frac{3}{4}$ to $\frac{3}{8}$ of transparent serum in ventricles; surface of ventricles of normal color; membranes covering medulla oblongata and cerebellum were thickened and opaque, and along the base of the brain were very vascular; considerable blood flowed from the vessels of the meninges, and there was some attachment of them to the convolutions; a considerable quantity of fluid blood escaped from the interior of the spinal canal which seemed flooded and engorged; spinal meninges thickened and highly vascular; appearance of cord normal, unless a little softened; $\frac{3}{4}$ of serum in pericardium; heart and lungs healthy; liver and kidneys congested; spleen large but not apparently congested, containing but little blood; spots of extravasated blood in walls of intestines. B. J. Hicks, M.D., N. O. Medical and Surgical Journal, July, 1847.

CASE 26. Male, æt. 3 years; duration sixty-one hours. Brain and medulla oblongata hyperæmic but of normal consistence; not more than 3j of serum in ventricles; cerebral dura mater injected; arachnoid intensely injected and dry; an abundant exudation of recent fibrin in meshes of pia mater having a gelatinous consistence, which was most abundant along the vessels of vertex, and along the longitudinal fissures and fissures of Sylvius; a slight deposit also over the optic commissure. C. W. Packard, M.D., New York Medical Record, April 15, 1872.

CASE 27. Male, æt. 24 years; duration two days. Serous effusions in pons Varolii and medulla oblongata; dura mater congested and whole surface of brain bathed in bloody serum containing jelly-like particles of fibrin. John Dwyer, *Ibid.*, March 15, 1872.

CASE 28. Male, adult; duration one day. Brain healthy and without congestion; cerebral dura mater healthy; arachnoid slightly thickened; increased quantity of fluid at base of brain; considerable blood-stained fluid under spinal meninges; cord healthy and without congestion; dark fluid blood in left cavities of heart; lungs congested; spleen and other abdominal organs healthy. Dr. Haverty, Dublin Quarterly Journal, 1867.

CASE 29. Male, æt. 31 years; duration 30 hours. Softening of superior portion of left cerebral hemisphere; entire brain less firm than natural (autopsy in January, fourteen hours after death); cerebral meninges hyperæmic; lungs engorged with blood and frothy serum; heart flabby, and a large amount of dark fluid blood in its right cavities; spleen normal; kidneys enlarged; liver twice its normal size and weight, pale and friable. J. B. Upham, M.D., Boston Journal, April 16, 1863.

SERIES II.—*Duration from 3 to 21 days.*

CASE 1. Male, æt. 43 years; duration probably twelve to fourteen days. Entire brain hyperæmic; sero-purulent fluid in ventricles; exudation of meningitis over internal surface of each hemisphere; spinal membranes somewhat opaque, with considerable fluid over surface of cord; cord congested in dorsal region; spleen normal, and nothing unusual in other organs. Bellevue Hospital, February 22, 1872.

CASE 2. Male, æt. 23 years; duration eighteen days. Brain congested; turbid serum in the meshes of pia mater; slight thickening of membranes in course of meningeal artery and at base of brain; pus in right pleural cavity; pneumonia in upper part of right lower lobe; gray hepatization in upper part of left upper lobe, and red hepatization in left lower lobe; fibrinous exudation over inflamed parts; kidneys congested. *Ibid.*, March 26, 1872.

CASE 3. Male, æt. 24 years; duration five days. Fibrin and pus in both posterior cornua, penetrating the walls of the ventricles; a thick layer of pus and fibrin over pons Varolii and medulla oblongata; arachnoid upon superior surface of brain opaque, and fluid underneath; entire lower half of cord covered with fibrin and pus, most abundant on anterior surface: normal as far as observed. Bellevue Hospital, March 3, 1872.

CASE 4. Male, æt. 30 years; duration six days. Brain greatly congested; turbid serum and half drachm of pus in ventricles; cerebral meninges congested; entire spinal meninges and cord congested; a considerable amount of pus over entire extent of cord; lungs and kidneys congested; spleen and liver normal. *Ibid.*

CASE 5. Female, æt. 30 years; duration sixteen to eighteen days. Brain congested, exhibiting numerous "puncta vasculosa;" ventricle contained turbid serum, with flocculi of lymph; increase of liquid at base of brain; meninges greatly congested; increased vascularity of posterior columns; exudation in meshes of pia mater; a few adhesions between arachnoidal surfaces; blood fluid, and containing gas bubbles; walls of heart flabby; Ojss of bloody pus in left pleural cavity, and left lung covered with shreds of bloody fibrin; hypo-

static congestion and œdema in depending parts of right lung; fatty degeneration of epithelia of tubuli uriniferi. *Ibid.*, May 4, 1872.

CASE 6. Male, æt. 35 years; duration four days. Considerable pus in ventricles; purulent exudation over entire surface of cerebrum and cerebellum; pus over posterior columns the entire length of cord, and in places over anterior columns. *Ibid.*, May 30, 1872.

CASE 7. Male, æt. 24 years; duration twenty days. Softening of fornix, corpus callosum, and septum lucidum; a large quantity of serum containing floculi of fibrin escaped from the ventricles; fibrinous exudation over optic commissure, and posteriorly to it, over surface of brain and upon under surface of cerebellum; intense congestion of sinuses and vessels of the meninges. *Ibid.*, May 29, 1872.

CASE 8. Female, æt. 3 years; duration sixteen days. Convolutions flattened; brain substance everywhere pale, soft, and anæmic; walls of lateral and third ventricles softened; a large quantity of turbid liquid in ventricles containing purulent floculi; yellowish exudation in a few intergyral spaces upon summit and sides of brain; fibrinous exudation over chiasm, and backward to under surface of medulla and over under surface of cerebellum; soft and dark semi-fluid clots in sinuses; meninges generally congested; an extended exudation in the meninges over posterior surface of cord, separated from the cord by purulent liquid; detached patches of exudation over anterior surface of cord; diploe of calvarium congested; soft and dark clots in both cardiac ventricles. Burdon-Sanderson, Report on Cerebro-spinal Meningitis.

CASE 9. Male, æt. 42 years; duration twelve days. Brain very moist and hyperæmic; ventricles not distended, but pus in posterior cornua; choroid plexus infiltrated with pus, which could be traced to surface of brain; great hyperæmia of cerebral dura mater; arachnoid everywhere opaque; pia mater of cerebellum injected; semi-transparent exudation in intergyral spaces of a gelatinous consistence; no exudation at base of brain, nor in fissures of Sylvius, nor upon medulla oblongata; spinal meninges everywhere hyperæmic; arachnoid covering the posterior aspect of the cord opaque, and its internal surface lined by exudation; under this was a layer of blood one-eighth of an inch thick over whole length of cord below the bronchial swelling; anterior aspect of cord healthy; spleen small, but soft and hyperæmic; liver and kidneys congested; lungs posteriorly at the base soft, hyperæmic, and of greater specific gravity than water. *Ibid.*

CASE 10. Male, æt. 19 years; duration five days. Numerous blood points, but no softening of brain; arborescent injection on surface of convolutions; $\frac{3}{4}$ of turbid sanguinolent liquid in lateral ventricles; cerebral meninges very hyperæmic; a thick pale yellow exudation in intergyral spaces of hemispheres, covering in some places the convolutions; it was most abundant on the right side, along the veins which converge to the fissures of Sylvius, where it was $\frac{1}{10}$ of an inch thick; it had the consistence of the brain, and was imbedded in the meshes of the pia mater; a similar exudation on surface of right side of cerebellum; vascularity, but less exudation at base of brain; pus flowed from the spinal canal; no exudation on anterior surface of cord, but posterior covered with concrete pus; spleen soft and congested, but of natural size. *Ibid.*

CASE 11. Female, æt. 20 years; duration fourteen days. A considerable quantity of serum under the cerebral meninges; exudation upon the optic commissure and pons Varolii, and here and there in other points; purulent liquid over the posterior aspect of the cord, especially in the cervical and lumbar regions; its anterior aspect healthy. *Ibid.*

CASE 12. Female, æt. 15 years; duration six days. Ventricles contained turbid serum; cerebral pia mater engorged, and arachnoid opaque; purulent matter in places over the brain; entire pia mater of spine hyperæmic, and covered with a thin coating of purulent matter; purulent liquid flowed from the spinal canal; blood in all the cavities very fluid and dark; lungs much engorged. Samuel Gordon, M.D., Dub. Quart. Jour., 1866.

CASE 13. Male, adult; duration fifteen days. Brain substance but little changed; ventricles contained turbid fluid; intense congestion of cerebral meninges, with opaque patches upon arachnoid; fibrin with pus at base of brain, over pons Varolii and upper part of medulla oblongata; fibrinous exudation also upon the dura mater near anterior extremity of longitudinal sinus; intense lividity in the cadaver about head, face, and trunk. Dr. Haverty, Dub. Quart. Jour., 1867.

CASE 14. Female, æt. 23 years; duration six days. Arachnoid at base of brain thickened and inflamed; pia mater much congested; fibrin along the course of the great vessels and in the subarachnoid space; spinal meninges and cord healthy. Ibid.

CASE 15. Female, æt. 15 years; duration fourteen days. 3iv of serum escaped from the ventricles and cavity of arachnoid; fibrin over surface of pons Varolii and medulla oblongata; spinal meninges greatly injected. Mr. Darby, Dub. Quart. Jour., 1867.

CASE 16. Female, æt. 38 years; duration eleven days. Base of brain soft and lacerable; surface of right corpus striatum softened; a large quantity of sero-purulent fluid in ventricles; fibrinous exudation over base of brain from fissures of Sylvius to cerebellum; the spinal canal contained a large quantity of sero-purulent fluid, with fibrinous flocculi; spleen turgid, but not softened; kidneys very congested; liver of the color of red lead, and converted into a pulp by scraping; intestines healthy, except injection of the lower part of ileum. Drs. F. J. Brown and T. P. Atkinson, in Simon's Report relating to Public Health, 1866.

CASE 17. Male, æt. 21 years; duration three to four days. Fibrin in posterior cornu of left ventricle; fibrinous exudation over surface of cerebrum, along longitudinal fissure, in sulci between hemispheres, over chiasm of optic nerves, along the origin of the nerves generally, and upon the cerebellum above and below; pia mater appears normal; clots of fibrin in cavities of heart; valves of heart normal; abdominal organs normal. J. B. Upham, M.D., Bost. Med. and Surg. Jour., April 16, 1863.

CASE 18. Male, æt. 23 years; duration three weeks. Brain firm and of normal consistence; 3j of fluid in left lateral ventricle, containing flocculent masses; in posterior cornu 3j of pus; similar fluid but in less quantity in right ventricle; deposit of fibrin in intergyral spaces over cerebral hemispheres; inferior aspect of medulla oblongata and cerebellum, it was in places one-sixth of an inch thick and firm; arachnoid cloudy; posterior portions of lungs slightly congested. Ibid.

CASE 19. Male, æt. 22 years; duration nine days. Ventricles contained sero-purulent liquid, with flakes of fibrin; cerebral dura mater healthy; engorgement of vessels on upper surface of brain; fibrino-purulent exudation along base of brain around the nerves of special sense, and upon medulla oblongata, extending into the depressions of cerebrum and cerebellum; hepatization of posterior part of left lung; heart normal; liver slightly congested; spleen and other abdominal organs normal; Peyer's patches normal. Ibid.

CASE 20. Male, æt. 18 years; duration thirteen days. Ventricles distended with fluid containing pus; cerebral meninges hyperæmic; over medulla oblongata and inferior aspect of cerebellum a deposit of fibrin from two-eighths to three-eighths of an inch thick; slight congestion of posterior portion of lungs; heart and abdominal organs healthy; solitary glands and Peyer's patches enlarged. Ibid.

CASE 21. Male, æt. 18 years; duration four and a half days. Effusion in ventricles; cerebral meninges congested; fibrinous exudation over upper surface of hemispheres of cerebrum and over cerebellum; organs of trunk apparently nearly normal. Ibid.

CASE 22. Male, æt. 23 years; duration four days. 3j of serum in lateral ventricles; all the cerebral sinuses engorged with blood; pia mater injected;

fibrinous deposit over entire surface of cerebrum, cerebellum, and medulla oblongata; purulent serum in sheath of spinal cord; organs of trunk healthy. Ibid.

CASE 23. Male, æt. 19 years; duration one week. Effusion of serum with pus in ventricles; sinuses and pia mater distended with blood; the usual exudation of fibrin over cerebrum, cerebellum, medulla oblongata, and pons Varolii; fibrinous exudation over the cord, and yellowish fluid in the sheath. Ibid.

CASE 24. Male, æt. 18 years; duration eleven days. Gray and white cerebral substance congested and softened; also the medulla oblongata, pons Varolii, and cerebellum; 3ss of sero-purulent fluid in lateral ventricles; all the cerebral meninges hyperæmic; 3jss of serum in cavity of the arachnoid; fibrin and pus in places in the meshes of pia mater; a large amount of fibrin over pons Varolii, medulla oblongata, and as far forward as the pituitary body; spinal meninges highly injected in every part, and considerable sero-purulent liquid in spinal canal; no pus or fibrin over cervical portion of spinal cord, but considerable of both from the seventh cervical vertebra to the sacrum; both lungs congested, and mucous membrane of stomach dark coloured and softened. Ira Russell, M.D., Bost. Med. and Surg. Jour., May 19, 1864.

CASE 25. Æt. about 15 years; duration six days. Cerebrum, cerebellum, pons Varolii, and medulla oblongata congested and softened; 3ss of sero-purulent fluid in lateral ventricles; choroid plexus injected and covered with fibrin and pus; 3ss of sero-purulent liquid in third ventricle; cerebral dura mater injected; 3ss of serum in arachnoidal cavity; pia mater infiltrated with fibrin and pus, following the course of the large vessels and sulci; fibrin and pus over spinal cord, the largest amount in the lumbar region. Ibid.

CASE 26. Male, æt. 28 years; duration six days. Cerebral membranes rather dry; a deposit of yellowish opaque fibrin over upper and anterior part of each hemisphere; also over base of brain, extending into the fissures, and over a portion of the cerebellum; whole length of spinal cord covered with a deposit similar to that upon the brain, less in quantity towards the upper extremity of the cord than below; lungs pale and healthy; liver and kidneys of dark colour; fibrinous coagula in each side of heart; 3ss of serum in pericardium. J. F. Adams, Bost. Med. and Surg. Journ., Aug. 16, 1866.

CASE 27. Female, æt. 50 years; duration four days. Whole brain œdematous, serum escaping on pressure; a small quantity of serum in ventricles; cerebral meninges injected and cloudy; 3iv to 3v of serum escaped from cavity of cranium; points of hepatization in the lungs; red corpuscles crenated; a small fibrinous clot in left ventricle, but blood otherwise fluid; slight effusion in pleural cavity. Dr. Hutchinson, Amer. Jour. of Med. Sci., July, 1866.

CASE 28. Male, æt. 75 years; duration four days. Brain hyperæmic; much serum in ventricles, coagulating after exposure; also greenish pus in ventricles; cerebral dura mater congested; small wart-like bodies extending into brain from dura mater; surface of brain covered with a greenish substance of cheesy consistence, which in some places concealed the convolutions, but elsewhere occupied only the intergyral spaces and depressions; heart, spleen, and liver large; kidneys normal; pink spots on mucous surface of stomach. Robt. T. Edes, M.D., Amer. Jour. of Med. Sci., July, 1864.

SERIES III.—*Duration over twenty-one days.*

CASE 1. Male, æt. 24 years; duration two months and seven days. Brain-tissue œdematous; a small portion of right middle lobe softened next to lateral ventricles; ventricles filled with clear serum; pia mater at base of brain thickened and opaque; on convex surface normal; spinal pia mater in dorsal region infiltrated slightly with pus; a thin layer of pus on posterior surface of cord, but none around posterior roots of nerves; left lower lobe in a state of red hepatization; emphysema of right lung. Bellevue Hospital, June 17, 1872.

CASE 2. Male, æt. 8½ years; duration two months. Cerebral convolutions flattened; sulci narrow; brain-tissue in the neighbourhood of subarachnoid space somewhat softened; Zij to Ziv of serum with flocculi of lymph in lateral ventricles; pia mater slightly adherent to base of brain, and fibrin in its meshes, especially upon the inferior surface of the cerebellum; no fluid in subarachnoid space; fluid in spinal canal increased; fibrinous exudation in pia mater around posterior and inferior portion of the cord; arachnoid in this situation adherent to dura mater by fibrin, and formed connective-tissue; spleen and other organs of trunk normal, except congestion of kidneys. *Ibid.*, June 20, 1872.

CASE 3. Duration thirty-five days. Portions of brain softened, also the medulla oblongata and pons Varolii; over the greater part of the posterior portion of the brain was a layer of fibrin, and along the course of the vessels in this situation pus was observed; dura mater dry and adherent to calvarium; about three pints of turbid serum escaped in attempting to remove the brain; only the cervical portion of spinal cord was examined, and this was found covered with greenish-looking fibrin; dark grumous blood with shreds of fibrin in the right cavities of heart; spleen rather large; common bile duct inflamed and impervious; other organs and tissues healthy. J. W. Moorman, M.D., *Amer. Journ. of Med. Sci.*, October, 1864.

CASE 4. Male, æt. 23 years; duration thirty-five days. Zij of serum in lateral ventricles; congestion of cerebral pia mater; yellowish fibrinous deposit in intergyral spaces upon upper surface of hemispheres; also a similar deposit with pus over pons Varolii and medulla oblongata; thoracic and abdominal organs healthy. J. B. Upham, M.D., *Boston Medical Journal*, April 16, 1863.

CASE 5. Male, æt. 21 years; duration twenty-two days. Brain somewhat softened; Zij of serum in ventricles; cerebral sinuses filled with dark blood; diffused redness of pia mater over cerebrum and cerebellum; fibrinous exudation over medulla oblongata two lines thick; yellowish serum in sheath of spinal cord; cord completely encased in fibrinous exudation one-quarter inch thick. *Ibid.*

CASE 6. Male; duration five weeks. Substance of brain of normal consistence and no blood points on its cut surface; more than Zij of turbid serum, containing purulent matter, escaped from the interior of the brain; veins of cerebral meninges somewhat injected; a thin milky fluid in places over surface of cerebrum; a small fibrino-purulent coagulum upon the upper surface of each cerebral hemisphere; a layer of tenacious fibrin three-eighths of an inch thick over the origin of the nerves of special sense, pons Varolii, medulla oblongata, and posterior fissure of cerebellum; Peyer's patches presented the shaven beard appearance, but otherwise the organs of the trunk were normal. *Ibid.*

CASE 7. Male, æt. 40 years; duration six and a half weeks. Brain of normal consistence; lateral ventricles distended with exudation containing pus; choroid plexus infiltrated; anterior two-thirds of cerebrum covered with fibrin of a greenish-yellow colour; adhesions of pia mater, inferior surface of anterior lobes, optic commissure, crura cerebri, and pons Varolii covered with exudation; pus upon medulla oblongata. W. S. Armstrong, *Atlanta Medical Journal*, June, 1866.

CASE 8. Female, æt. 18 months; duration twenty-four days. Brain normal; bloody serum in ventricles; entire pia mater of brain deeply injected, and posterior portion engorged. Charles Chester, M.D., *Medical and Surgical Journal*, November, 1847.

SERIES IV.—*Duration unknown.*

CASE 1. Male, æt. 20 years. Purulent liquid in all the ventricles; cerebral meninges and surface of brain greatly congested; pus on convexity and base; pus over posterior surface of cord in lumbar and dorsal regions; none in cervical; softening of cord in upper part of dorsal region; mucous membrane of

bladder injected and softened; bloody urine in bladder; urethra congested; lower lobes of lungs congested. Bellevue Hospital, April 13, 1872.

CASE 2. Male, æt. 23 years; duration more than one week. Sero-purulent liquid in lateral and fourth ventricles; cerebral pia mater infiltrated with pus at several points at base and over convex surface; below brachial plexus spinal pia mater infiltrated with a thick layer of pus, completely covering the cord; kidneys and lungs congested; spleen large. *Ibid.*, April 29, 1872.

CASE 3. Male, æt. 43 years; duration more than one week. Sero-pus in ventricles; fibrin and pus over convex surface of brain, and at base in the meshes of the pia mater; a small plate of bone in spinal pia mater; fibrin and pus in pia mater, over posterior inferior two-thirds of cord at points; cord not notably changed. *Ibid.*, May 7, 1872.

CASE 4. Female, æt. 20 years; duration more than ten days. Numerous blood points on incised surface of brain; turbid serum and fibrinous flocculi in lateral ventricles; choroid plexus and velum interpositum coated with fibrin; cerebral dura mater more vascular than normal; vessels of pia mater over entire brain hyperæmic; slight increase of subarachnoid fluid; spinal fluid turbid and quantity increased; slight exudation in spinal pia mater and a few adhesions between arachnoid surfaces; blood fluid and gas bubbles in cavities of heart; Ojss of bloody sero-pus in left pleural cavity; left lung coated with soft blood-stained shreds of fibrin; this lung compressed; hypostatic congestion and œdema of depending part of right lung; liver large, flabby, and fatty; spleen normal; fatty degeneration of tubuli uriniferi. *Ibid.*, May 10, 1872.

CASE 5. Male, æt. 47 years; duration probably about two days. Blood points on incised surface of brain; a large amount of transparent serum in ventricles; vessels of cerebral pia mater, arterial and venous, engorged; membranes thickened, adherent, and opaque (was an habitual drunkard); a considerable quantity of clear liquid under the meninges, over convex surface, and at base of brain; spinal membranes congested, but free from exudation; blood fluid, and of a dark-brown colour; no notable change observed in the organs of the chest. W. H. H. Githins, M.D., *Amer. Journ. of Med. Sci.*, 1867.

CASE 6. Male, æt. 17 years; duration more than five days. Numerous blood points on incised surface of brain; meninges of brain somewhat congested; arachnoid slightly cloudy; lungs greatly engorged, and containing spots apparently apoplectic; spleen greatly enlarged, and hyperæmic; liver slightly enlarged and congested; some of Peyer's patches raised; other organs normal. Dr. J. B. Upham, *Boston Med. and Surg. Journ.*, vol. lxxviii.

CASE 7. Male, æt. 25 years; duration probably less than one week. Whole brain substance injected; pus in posterior part of right ventricle; choroid vessels full; walls of ventricles opaque; serum in lateral and third ventricles; pia mater congested and adherent in places to the brain; upper portion of spinal pia mater injected; lower portion not examined; lungs intensely congested, and of a deep-red colour; right lower lobe solidified; nodules of pneumonia in left lung; heart substance, liver, intestines, and kidneys injected and dark; "spleen not overfull and rather light-coloured." John A. Lidell, M.D., *Treatise on Apoplexy, etc.*, page 331.

CASE 8. Male, adult. Brain softened; ventricles not distended, normal; dura mater adherent to the meninges covering the brain; arachnoid thickened and without lustre; vessels of pia mater engorged with dark blood; yellow purulent matter in intergyral spaces of cerebrum; fluid in subarachnoid space slightly turbid and quantity increased; arachnoid and pia mater showing evidences of inflammation over entire cord; in region of third and fourth dorsal vertebræ 3j of pus; cord softened opposite third and fourth dorsal vertebræ; normal above and below. F. C. Lœber and A. T. Watson, *American Medical Times*, May 7, 1864.

CASE 9. Male, adult. Substance of brain congested, and numerous blood points on cut surface; ventricles not distended, but posterior cornu of right

ventricle contained a little pus; a thick layer of fibrin in the sulci of cerebrum; more at vertex than laterally; increased quantity of clear fluid in subarachnoid space; entire base of brain covered with fibrin; the least upon the cerebellum; appearance of spinal meninges the same as cerebral; blood fluid, not coagulating in several hours. *Ibid.*

CASE 10. Female, adult. Brain much congested; a small amount of fluid in lateral ventricles; ependyma thickened and congested; cerebral dura mater injected, 3jss of sanguinolent fluid in cavity of arachnoid; purulent exudation in pia mater along longitudinal and Sylvian fissures, at base of brain and in sulci between convolutions; pia mater agglutinated with fibrinous exudation and hyperæmic; the spinal meninges, as far as could be observed from the cranial cavity, resembled the cerebral; portions of lungs hepatized; 3j of bloody fluid in pericardium; soft clots and fluid blood in cavities of heart; spleen normal; liver congested; ecchymotic points in mucous membrane of stomach. Charity Hospital, March 24, 1872.

CASE 11. Male, adult; duration probably three days. Effusion of serum in cavity of cerebral arachnoid; meninges hyperæmic, and deposit of fibrin over anterior surface of cerebrum, and a thick deposit over and around the optic commissure, over entire cerebellum, crura cerebri, pons Varolii, and medulla oblongata; exudation over entire length of cord to cauda equina; spinal nerves enveloped by the deposit; pus at points along the cord; organs of trunk apparently healthy; right cavities of heart distended with blood and a large clot in right ventricle. W. S. Armstrong, Atlanta Medical and Surgical Journal, June, 1866.

The blood undergoes changes, which are due in part to the inflammatory, and in part to the constitutional and asthenic nature of the disease. The proportion of fibrin is increased in cases that are not speedily fatal, as it ordinarily is in idiopathic inflammations. Analyses of the blood published by Ames, Tourdes, and Maillot, show a variable proportion of fibrin from 3.40 to more than six parts in 1000. In sthenic cases accompanied by a pretty general meningitis, cerebral and spinal, there is, after the fever has continued some days, the maximum amount of fibrin, while in the asthenic and suddenly fatal cases, with inflammation slight, or in its commencement, the fibrin is but little increased. The most common abnormal appearance of the blood observed at autopsies, is a dark colour with unusual fluidity, and the presence of dark, soft clots. Exceptionally bubbles of gas have been observed in the large vessels, and the cavities of the heart. An unusually dark appearance of the blood, small and soft dark clots, and the presence of gas bubbles, when only a few hours have elapsed after death, indicate a malignant form of the disease, in which this fluid is early and profoundly altered. In certain cases the blood is not so changed as to attract attention from its appearance. The points or patches of extravasated blood which are observed in the skin during life in a certain proportion of cases, usually remain in the cadaver. In incising them the blood is seen to have been extravasated, not only in the layers of the skin, but also in the subcutaneous connective tissue. Extravasations of small extent are also sometimes observed upon the thoracic and abdominal organs.

In those who die after a sickness of a few hours or days, namely, in the

stage of acute inflammatory congestion, the cranial sinuses are found engorged with blood, and containing soft, dark clots. The meninges enveloping the brain are also intensely hyperæmic in their entire extent in most cadavers; but in some, in certain parts only, while other portions appear nearly normal. In those cases which end fatally within a few hours, this hyperæmia is ordinarily the only lesion of the meninges; but if the case is more protracted, serum and fibrin are soon exuded from the vessels into the meshes of the pia mater, and underneath this membrane over the surface of the brain. Pus cells also occur mixed with the fibrin, sometimes so few as to be discovered only by the microscope, but in other cases in such quantity as to be much in excess of the fibrin, and be readily detected by the naked eye. Pus, which in these cases no doubt consists of white blood-corpuscles which have escaped with the fibrin from the meningeal vessels, sometimes appears early in the disease. Thus, in the *Dublin Quarterly Journal*, 1866 (Series I., Case 6), Gordon relates a case in which death occurred after a sickness of five hours, and a purulent appearing greenish exudation had already occurred in places under the meninges. The exudation of fibrin commences also in the course of a few hours. Thus in a case of thirty hours' duration published by Dr. Wm. Frothingham in the *American Med. Times*, April 30, 1864, and in another of one day's duration, published by Dr. Haverty in the *Dublin Quarterly Journal* for 1867, exudation of fibrin had already occurred (Series I., Cases 2 and 9).* The arachnoid soon loses its transparency and polish, and presents a cloudy appearance over a greater or less extent of its surface. This cloudiness is greatest in the vicinity of the fibrinous exudation, but it occurs also where no such exudation is apparent to the naked eye. Dr. Gordon describes a case of only eight hours' duration, in which the arachnoid was already opaque at the vertex, but of normal appearance at the base of the brain (*Dublin Quarterly Journal*, 1866) though the vessels of the pia mater were everywhere greatly congested.

The exudation, serous, fibrinous, and purulent, occurs, as in other forms of meningitis, within the meshes of the pia mater, and underneath this membrane over the surface of the brain. It is readily raised from the surface of the brain with the meninges. It is most abundant in the intergyral spaces around the course of the vessels, over and around the optic commissure, the pons Varolii, the cerebellum, medulla-oblongata, and along the Sylvian fissures. It is most abundant in the depressions, where it sometimes has the thickness of $\frac{1}{10}$ to $\frac{1}{4}$ of an inch, but it often extends over the convolutions so as to conceal them from view.

Most other forms of meningitis have a local cause, and are therefore limited to a small extent of the meninges, as for example meningitis from tubercles, or caries of the petrous portion of the temporal bone, in both which it is commonly limited to the base of the brain, or from accidents when the meningitis commonly occurs upon the side or summit of the

brain. The meningitis of cerebro-spinal fever on the other hand, having a general or constitutional cause, occurs with nearly equal frequency upon all parts of the meningeal surface, except that it is perhaps most severe in the depressions where the vascular supply is greatest. In cases of great severity, the inflammatory exudation, fibrinous, or purulent, or both, may cover nearly, or quite, the entire surface of the brain. Thus, in the case of a negro, 35 years old, only four days sick, whose body was examined at Bellevue Hospital on May 30th, 1872, the record states that there was a purulent exudation over the entire surface of the cerebrum and cerebellum (Series II., Case 6). The quantity of serous exudation varies greatly in different cases. In some the quantity is so small as scarcely to attract attention, but in other instances, especially when the disease is protracted, it is large. In a case reported by Dr. Moorman in the *Amer. Journ. of Med. Sci.* for Oct., 1866, it is stated that about three pints of turbid serum escaped from the cranial cavity in attempting to remove the brain, but as there was no measurement the statement may be somewhat exaggerated.

In those who die at an early stage of the disease, the vessels of the brain, like those of the meninges, are hyperæmic, so that numerous "puncta vasculosa" appear upon its incised surface. At a later period the hyperæmia, like that of the meninges, may disappear. If there is much effusion of serum within the ventricles and over the surface of the brain, the convolutions are apt to be flattened, and the pressure may be such, that the amount of blood circulating within the brain is reduced below the normal quantity. Thus, in the case of a child of three years, who lived sixteen days, and was examined after death by Burdon-Sanderson, the ventricles contained a large amount of turbid serum, and the brain substance was everywhere pale and anæmic.

Cerebral *ramollissement* occurs in certain cases. At one of the examinations in Charity Hospital, the patient having been only three days sick, the brain was found much softened. The dissection was made seven hours after death, so that the softening could not have been cadaveric (Series I., Case 24). At one of the post-mortem examinations in Bellevue Hospital, softening of the fornix, corpus callosum, and septum lucidum was observed; and in another, softening in the neighbourhood of the subarachnoid space (Series II., Case 7, and Series III., Case 2). In a case related by Dr. Moorman in the *Amer. Journ. of Med. Sci.* for Oct., 1866, it is stated that portions of the brain, medulla oblongata, and pons Varolii were softened (Series III., Case 3). In a case observed by Dr. Upham (Series I., Case 29) there was softening of the superior portion of the left cerebral hemisphere. Occasionally the whole brain is somewhat softened. Burdon-Sanderson, Russell, and Githens, each relate such a case. Moreover, the walls of the lateral ventricles are ordinarily more or less softened in these cases, as in the ordinary form of meningitis. In rare instances the brain is œdematous as in a case published by Dr. Hutchinson in the *Amer. Journ. of Med. Sci.*

for July, 1866. In this case the patient was only four days sick, and the whole brain was œdematous, serum escaping from the incised surface (Series II., Case 27).

The ventricles contain liquid, in some patients transparent serum, in others serum turbid and containing flocculi of fibrin or fibrin with pus. The liquid in the different ventricles as they intercommunicate is similar. The choroid plexus is either injected or it is infiltrated with fibrin and pus. In advanced cases with the abatement of the inflammation absorption commences. The serum obviously disappears soonest and the pus and fibrin more slowly, by fatty degeneration and liquefaction. Still absorption and the return of the brain and meninges to their normal state are slow, and hence the tediousness of convalescence. An infant, whom I was allowed to examine in the practice of another physician, took the disease at the age of five months, and two months subsequently, great prominence of the anterior fontanelle and other symptoms indicated still the presence of a considerable amount of effusion within the cranium. No post-mortem examinations, so far as I am aware, have yet revealed the state of the brain and meninges in those who have had this disease at some former period and entirely recovered from it, but it is not improbable that some opacity and preternatural adhesions in places may continue for life.

The remarks made in reference to the cerebral apply for the most part to the spinal meninges. There is at first intense hyperæmia of the membranes usually over the entire surface of the cord, soon followed by fibrinous, purulent and serous exudation, in the meshes of the pia mater, and underneath this membrane. Thickening and opacity of the meninges, and often adhesions, occur in protracted cases. The exudation is sometimes confined to a portion of the meninges, more frequently that covering the posterior than anterior aspect of the cord, but it may occur in any part, and in severe cases the entire pia mater of the spine is infiltrated with it. The exudation may have the usual appearance of fibrin and pus, but it is sometimes greenish and sometimes blood stained. Small extravasations of blood almost necessarily occur as a result of the intense hyperæmia, and in one case related by Burdon-Sanderson it is stated that there was a layer of blood $\frac{1}{8}$ of an inch thick over the whole cord below the bronchial swelling. In post-mortem examinations the central canal of the cord has usually been overlooked. Ziemssen relates a case, and Gordon another, in which it was dilated and filled with purulent fluid. The anatomical changes which have been observed in the cord itself have been injection of its vessels in recent cases, and occasional softening of portions. Thus, in a case which was examined in Bellevue Hospital, April 13, 1872, it is stated that there was softening of the cord in the upper part of the dorsal region. In most of the examinations the only abnormal appearance observed in the cord was hyperæmia, but in a considerable proportion of cases the records state that the substance of the cord appeared normal.

No constant or uniform lesions occur in the organs of the trunk. The most common is congestion of the lungs, especially of the posterior portions, with more or less œdema, and nodules of hepatization or points of extravasation. Effusion of serum, sometimes blood stained, occasionally occurs in the pleural and other serous cavities. The auricles and ventricles of the heart, as already stated, contain more or less blood, with soft dark clots in the more malignant and rapidly fatal cases, but larger and firmer in those which have been more protracted. The spleen, liver, kidneys, stomach and intestines, one or more, are sometimes congested, but in other cases their appearance is normal. The absence of uniformity as regards the state of the spleen, the fact that in many patients it undergoes no appreciable change, is important, since this organ is so generally enlarged and softened in infectious diseases. The agminate and solitary glands have ordinarily been overlooked at post-mortem examinations, but in certain cases they have been found prominent.

TREATMENT. *Preventive.*—Although we do not fully understand the conditions in which cerebro-spinal fever originates, it is certain, from facts observed in epidemics, that we are able to do something to diminish its severity and prevalence and to protect the community. Measures to this end must be of a twofold character, namely, such, in the first place, as are calculated to improve the surroundings of the individual, so as to conduce to a better state of health, and secondly, the regulation of his mode of life. Cleanliness and dryness of streets and domiciles, perfect drainage and sewerage, prompt removal of all refuse matter, avoidance of overcrowding, so as to procure the utmost salubrity in the atmosphere, the use of plain and wholesome food—in a word, the strict observance of sanitary requirements in all the surroundings—cannot fail to reduce the number and diminish the severity of cases; for, as we have seen, this disease assumes its worst form and numbers the most victims where anti-hygienic conditions most abound. Of scarcely less importance is a strict surveillance of the mode of life, especially of children and young people, during the time of an epidemic. We have seen that this disease not infrequently follows irregularities in the mode of life, excesses of whatever kind, and fatigue, mental or bodily. These should therefore be avoided. A quiet mode of life and moderate exercise, plain and wholesome and regular meals, and the full amount of sleep afford some, but not complete, security in the midst of an epidemic.

Curative.—It will aid in determining the proper mode of treatment to bear in mind the anatomical characters as ascertained by post-mortem examinations. As the chief danger in the first days is from the intense inflammatory congestion of the cerebro-spinal axis, the prompt employment of measures calculated to relieve this is of the utmost importance. To this end bladders or bags of ice should be immediately applied over the head and nucha, and constantly retained there during the first week.

Bran mixed with pounded ice produces a more uniform coldness, and is more comfortable to the patient, than ice alone. Cold produces a prompt and powerful effect in diminishing the turgescence of the cerebral and meningeal vessels. A hot mustard foot-bath or general warm bath with mustard, should also be employed as early as possible, since it acts so powerfully as a derivative from the hyperæmic nerve centres, tends to calm the nervous excitement and prevent convulsions. An enema to open the bowels is also proper.

Should bloodletting be employed, especially in the more sthenic cases? Even in the commencement of the present century, when it was customary to bleed generally or locally in the treatment of inflammatory and febrile diseases, a majority of the American practitioners whose writings are extant discountenanced the use of such measures in the treatment of this disease. Drs. Strong, Foot, and Miner, though under the influence of the Broussaisian doctrine, were good observers, and they soon abandoned the use of the lancet and leeches in the treatment of these patients for more sustaining measures. Strong, who published a paper on spotted fever in the *Medical and Philosophical Register*, in 1811, states that certain physicians employed venesection as a means of relieving the internal congestions, but finding that the pulse became more frequent after a moderate loss of blood, they soon laid aside the lancet. Some experienced physicians of that period, however, continued to recommend and practise depletion, general as well as local, as, for example, Dr. Gallop, who treated many cases in Vermont in the epidemic of 1811.

No physician at the present time recommends venesection, but some of the best authorities, as Sanderson and Niemeyer, approve of local bleeding in certain cases. It may be stated as a safe rule that leeches or other modes of local depletion should not be prescribed in a large majority of cases, and if prescribed in any case it should be on the first day, for on the first day the maximum of inflammatory congestion is attained, and in no case should more than a very moderate quantity of blood be abstracted. Blood should only, in my opinion, be abstracted, and in small quantity, from the temples or behind the ears, in the more sthenic cases, in which, after the prompt employment of the other measures recommended, the stupor becomes more and more profound, and the patient appears already in incipient coma. But in allowing a moderate depletion it must not be forgotten that the disease is in its nature asthenic, and in its subsequent course will require sustaining measures. It is apparent, however, that the abstraction of blood if once allowed is likely to be recommended too frequently in the treatment of this disease by those who have had but little experience with it, for the state of most patients in the commencement seems so critical, and the stupor so great, that the most energetic measures seem to be required. But if the blood of patients is spared, and they are promptly and properly treated otherwise, it is surprising to see how many

emerge from the stupor and finally recover. For example, in a case related to me by Dr. Griswold, the patient seemed to be comatose for three days, being apparently unconscious and the pupils scarcely responding to light, but he recovered without losing blood. In only one case have I recommended the abstraction of blood, and this was so instructive that I will briefly relate it.

M., a female, 4 years old, was seized at 2 A.M. March 7, 1873, with vomiting, chilliness, and trembling, followed by severe general clonic convulsions lasting about fifteen minutes. On visiting her early in the morning, I found her semi-comatose, with a pulse of 132, which in a few hours rose to 156; temperature $101\frac{1}{4}^{\circ}$, respiration 44; eyes closed; pupils moderately dilated and responding feebly to light; surface presenting a dusky mottling; constant tremulousness, and frequent twitching of limbs. Four grams of bromide of potassium were ordered to be given every hour to two hours, with the usual local measures, namely, ice to the head and nucha, and a hot mustard foot-bath, followed by sinapisms to the extremities.

8th. Pulse 136; is partly conscious when aroused, but immediately relapses into sleep; head considerably retracted; bowels constipated; vomits occasionally; temperature 102° . Treatment, a leech to each temple, on account of the extreme stupor; other treatment to be continued.

9th. The leech-bites bled, though slowly, nearly five hours; pulse 180, and so feeble as to be counted with difficulty; temperature $101\frac{1}{2}^{\circ}$. The patient is evidently sinking. Treatment, a teaspoonful of Bourbon whiskey in milk every two hours, beef-tea and other nutritious drinks frequently, also the bromide at intervals. Evening, pulse 172, still feeble.

10th. Pulse 180, barely perceptible; great hyperæsthesia; temperature of axilla 100° , of fingers and hand below 90° ; axes of eyes directed downwards.

11th. Pulse still very feeble, varying from 160 to 228; temperature $102\frac{1}{4}^{\circ}$. There has been no intermission in the use of the stimulants or nutriment night or day; pupils moderately dilated and somewhat more sensitive to light.

After this the patient gradually rallied for a time, so that the pulse became stronger and less frequent, but death finally occurred after nine weeks in a state of emaciation and extreme exhaustion. Slight convulsions occurred in the last hours.

It is seen that after the loss of blood from two leech bites, this patient passed into a state of extreme exhaustion so that for three days I did not believe that she would live from one hour to another, and death finally occurred. Although the loss of blood may have been useful in relieving the stupor, yet a worse danger resulted. Experience like this, which I believe corresponds with that of other observers, shows how seldom and with what caution the blood of the patient should be abstracted.

The internal remedy most in favor with the profession of this city, and justly, in the first stage of this disease, is the bromide of potassium, especially in the treatment of children. Evidently a remedy is required which will diminish the calibre of the arterioles, and consequently the hyperæmia of the cerebro-spinal axis and its meningeal covering. Ergot has been employed for this purpose, and in some instances with a satisfactory

result; but bromide of potassium, while it contracts the arterioles of the encephalon, is at the same time a powerful sedative to the nervous system. More than any other safe internal remedy, it prevents convulsions in children, which occurring in this disease add a passive to the already intense active congestion of the cerebro-spinal axis. This agent in medicinal doses produces no ill-effect except when given frequently for a lengthened period, when it may accumulate in the system. A child of five years may take five or six grains every two, three, or four hours, according to the urgency of the case. After the first week it should be given less frequently and finally omitted. The practice of some physicians, of continuing the use of the bromide in frequent large doses after the first or at least second week, is to be deprecated, for after a time it is apt to produce symptoms which can with difficulty be discriminated from those of cerebro-spinal fever. These are stated as follows by Mr. Wood: "Great muscular debility, dimness of sight with dilated pupils, irregular gait, the patient reeling as though intoxicated, whilst nausea, vomiting, or purgation, with abdominal pain of a dull aching character, may also be present." (*British Med. Journ.*, Oct. 14, 1872.) It is obviously better after the first week, if the symptoms are no longer urgent, to discontinue the bromide entirely, than to continue its use in such doses and for such a period that there may be danger of producing its physiological effects. Nevertheless it is proper to resume its use during periods of recrudescence which are so apt to occur at any stage of the disease.

The bromide can not be depended on to allay the pain which often, on account of its severity, requires immediate treatment, and sometimes it does not allay the excessive agitation. For these symptoms an opiate is indicated, which in my practice has produced a much more satisfactory result than hydrate of chloral. Quite moderate doses are sufficient to produce the effect desired. A patient of six years was quieted by $\frac{1}{3}$ part of a grain of sulphate of morphia. So useful are opiates in allaying pain in this disease, that some observers, as Niemeyer and Ziemssen, consider them the most valuable of the internal remedial agents which we possess, and the benefit from their use in these cases has certainly had considerable effect in disabusing the minds of physicians of the dread which they have entertained of their employment in acute affections of the brain. Mannkoff and others have employed subcutaneous injections of morphia.

Quinia is suggested as a remedy by the paroxysmal character of the pains and the fever, but I believe that I am sustained by the general experience of physicians in this city in stating that it has very little effect upon either of these symptoms, or upon the course of the disease. I have employed it in small and large doses, as many as fifteen grains per day to a child of thirteen years, but am not aware that it has been of any

service except as a tonic. There is perhaps no better remedy for the nausea than bismuth in large doses.

Frequent counter-irritation along the spine by dry cups or an irritating liniment is useful from the first, and vesication of the nucha by cantharidal collodion or otherwise when the ice-bag is discontinued. Sustaining measures should also be commenced early. Tonics, vegetable and ferruginous, should be administered after the disease has continued a few days, alternating with and finally superseding the bromide. I have in some cases employed the citrate of iron and ammonia. The diet must be nutritious, consisting of the meat broths, milk, etc., during the entire course of the disease. Most patients require alcoholic stimulants sooner or later. In cases presenting a feeble pulse, and other evidences of prostration, their early and continued employment is advisable, as in the case which I have related, in which whiskey was administered every two hours after the second day. The constipation is ordinarily best relieved by enemata. The room should be dark, of comfortable temperature, and quiet.

ART. II.—*Six Cases of Lumbar Colotomy, with Remarks upon this Operation, and a Table of Eighty Cases in which it was Performed.*
By ERSKINE MASON, M.D., Adjunct Professor of Surgery in the University of New York; Visiting Surgeon to the Charity and the Roosevelt Hospitals, New York.

CASE I.—Mrs. F. A., aged 39 years, had been suffering from venereal stricture of the rectum for two years. When she first came under my observation she had a very tight annular stricture about one inch above the anus. Failing to accomplish much by the use of bougies, I divided the stricture in several places with Cooper's hernia knife on the 2d of July, 1870; I then dilated the parts first with my finger then by a bougie, and discovered by this means the presence of another stricture one inch above the first; spiral in form, which extended up the bowel for about two inches; this stricture I also divided, and, while the patient was under ether, dilated it with bougies till the largest size was passed. Her condition was by this operation greatly relieved. Bougies were introduced at intervals of three or four days, and the diarrhœa and pain, from which she had suffered, diminished. About this time she was suffering from some uterine disturbance; she was transferred to the uterine ward of Charity Hospital, where the use of the bougie was unfortunately discontinued. A month after this it was noticed that constriction of the rectum had again returned. Bougies were resorted to and the stricture was also ruptured. In March I found the constriction was so great that it only allowed the introduction of the end of the index finger. When I came on duty the following April, her condition being no better, I proposed to her the operation of opening the colon after Amussat's method, as a last resort.

The patient having agreed to this proposal, I performed the operation

of lumbar colotomy on the 8th of May. Just before the operation the colon was distended by a large quantity of warm water, and a tampon introduced to prevent regurgitation. A pillow was then placed under the right side, and the rules laid down by Mr. Allingham for finding the colon were strictly followed. Having divided the deep fascia, the intestine, of greenish-hue and greatly distended, made its appearance. This was carefully examined both by myself and several of my colleagues, and we had no doubt but that it was the descending colon which we were observing, indeed some of us thought that its longitudinal bands were apparent. Two sutures were passed through the gut, and the intestine was then well drawn up, attached to the integument, and a longitudinal opening made in the gut, half an inch or more in length, when out gushed a large quantity of comparatively clear water (which we took to be the enema which had been administered) and which had a feculent odour. The patient did well until May 11th; the pain she had previously suffered having ceased. At 11 o'clock that night, while being moved from one bed to another, she complained suddenly of a pain in her back, and this continued more or less until the following afternoon, when I was surprised to find her with an anxious countenance, hands, arms, and face quite cold, respiration thoracic and very rapid. The wound had united firmly throughout its whole extent, but there was an erysipelatous blush all around it. I opened one end of the wound and allowed exit to about two teaspoonfuls of pus, which afforded relief to the pain in her back. I saw her again about 9 o'clock that evening, when she was passing rapidly into a comatose state. The erysipelas had extended by this time all over the back and for a considerable distance up the side of the body, and the edges of the wound which had been opened presented the appearance of commencing hospital gangrene. During the last five hours of her life she had complete suppression of urine.

Autopsy.—As made by Dr. Edward G. Janeway, thirty-seven hours after death. Rigor mortis almost wanting; skin slightly jaundiced; edges of wound everted, and presented a gangrenous appearance; blood throughout the body black and fluid. Upon opening the abdomen, no general peritonitis was found; the cavity contained about three ounces of bloody serum. Peritoneum covering the spleen was adherent to the diaphragm by old adhesions. The lower end of the great omentum was bound down in the pelvic cavity by old adhesions to the uterus, thus pulling down the transverse colon and its splenic flexion; the latter towards the median line, so that its course lay over the anterior border of the kidney. The descending colon, instead of occupying its normal position, lay over the hilus of the kidney and outer border of the psoas muscle, was empty and contracted. There was a clean transverse opening through the peritoneum, half an inch above the crest of the ilium, an inch and a half in length; through this opening a knuckle of the jejunum passed, and was stitched to the skin on either side of an opening corresponding to the inner one. This portion of the intestine was eight inches from the duodenum. The peritoneum covering this portion of the intestine for four inches upwards, and eight inches downwards, presented evidences of recent inflammation. These portions of intestines had become adherent to one another, and to the peritoneal opening, so as to close the latter. The mucous membrane of the jejunum at the artificial opening was simply congested; there was no evidence of peritonitis around the opening. Ascending portion of the duodenum was adherent to gall-bladder by old adhesions. The uterus was

adherent to the rectum, closing Douglas's *cul de sac*. She evidently at some time had had pureperal peritonitis. Microscopical examination of kidneys showed blood effused in a few malpighian bodies; the latter were granular, in some their capsules were thickened. In the convoluted tubes the epithelium was granular, increased in size, nearly filling the tubes, but intact. Straight tubes; epithelium detached, showing in some places the tubes almost entirely denuded. The stroma showed increase of connective tissue, with some free oil globules. The liver structure showed the liver-cells large, granular, and fatty.

The points of great interest in this case are :—

1. The false position of the jejunum, so enormously distended.
2. The abnormal position of the colon.
3. No peritonitis immediately around the wound.
4. The relief of rectal pain after the operation.

CASE II. *Cancerous Stricture of the Rectum*.—Mrs. A. S., aged 64; mother of fourteen children, ten of whom were living. There was no hereditary taint of cancer in any of her family, and had always enjoyed good health until five years ago, when she first noticed some pain on defecation. She became a patient in Charity Hospital May 8th, 1871. At this time she was extremely feeble, and her sufferings were frightful. For some days she suffered from absolute constipation, this condition alternated with diarrhoea and bloody discharges, accompanied with intense bearing down pains. A tight stricture was discovered about two inches from the anus, and the whole recto-vaginal wall was infiltrated with a cancerous mass, as well as the neck and posterior portion of the fundus uteri. There was also present a recto-vaginal fistula. Her condition on the 26th of May was such that it did not appear possible for her to last many days, but for the sake of giving her some ease from her agony, I proposed colotomy. This was readily agreed to by the patient and her friends, and on May 27th, I did the operation, which she bore remarkably well. The distressing pain and constipation were much relieved, and she was in a condition, temporarily at least, to make life tolerable. For a month she may have been said to have greatly improved; her appetite improved and she gained in strength. The disease, however, progressed, and she died from exhaustion on the 27th of August, just three months after the operation.

At the *autopsy* all the organs of the pelvis were found matted together in one cancerous mass, the muscles and bones being also involved. At a point midway between the promontory of the sacrum and the anus, the rectum had entirely disappeared.

CASE III. *Cancerous Stricture of the Rectum*.—Mrs. E. W., aged 37, has had seven children; family all healthy; has never known any of her relatives to have had cancer. She was a large, stout woman, but of late has lost flesh rapidly. I first saw her about June the 1st, 1871, with Dr. Edward G. Janeway, who placed her under my care. With the exception of an attack of inflammatory rheumatism six years ago, she has enjoyed good health, till last October, when, getting her feet wet, she was seized the following morning with severe pain through her hips and urgent desire to evacuate the bowels. Her bowels previous to this had been constipated. In her efforts at stool, she stated, at this period, she had no fecal movement, but a slimy bloody discharge. From this date followed

the usual train of harassing symptoms attendant upon cancer of the rectum. On examination, per vaginam, a hard mass was felt in the recto-vaginal septum. The rectum, about two inches from the anus, was blocked up by ulcerated cancerous deposits so as only to admit the introduction of the little finger, and that with great pain. There was also an ulceration upon the margin of the anus which appeared two months ago. She had also a purulent offensive discharge from the bowel. At this time she was suffering from diarrhœa, having some ten passages during the day, and each movement attended with excruciating pain, while at night she was tormented with lancinating pains through the pelvis. I advised her to submit to colotomy at once. For the purpose of having the operation performed she entered Charity Hospital, June 12th, and that afternoon, the bowel having been somewhat distended with warm water, I opened the descending colon in the left lumbar region. The operation was performed without any particular difficulty, but owing to the large amount of adipose tissue in this region, and remarkable development of the muscles, the depth of the wound was unusually great. The operation was finished and patient placed in bed at 10 minutes after 4 o'clock. 5 P. M., pulse good and full, 92; temperature 98° ; complains of some pain in the wound; 10 gts. Magendie's solution of morphia were given simultaneously. 7.45 P. M., pulse 120, has vomited several times. $10\frac{1}{2}$ P. M., complains of pain in the wound; pulse and temperature the same; 30 gts. of tinc. opii with some whiskey given by the mouth.

June 13. Slept better during the night than she has done for some time before; pulse 120, temp. $101\frac{1}{2}^{\circ}$; tongue dry, and still complains of the wound and some pain in left iliac region. She took that day milk punch and some morphia. Evening, pulse 132, temp. $101\frac{1}{2}^{\circ}$, face flushed, respiration hurried, tongue slightly coated and dry, vomited during the day, has had two movements of the bowels, both per rectum and artificial opening. Pain over iliac region somewhat increased by pressure. She was given tinc. aconite rad. gts. ij with liq. ammon. acet. \mathfrak{z} j every two hours, and a warm fomentation applied over the abdomen. 11 P. M., pulse 140, has great thirst, face flushed, respiration hurried, countenance anxious, vomited once during the evening; slept a good deal during the night.

14th. A. M., pulse 136, temp. $99\frac{1}{2}^{\circ}$; great thirst, countenance still flushed, is sweating; wound is erysipelatous, and its edges swollen, removed some sutures, and some sanious fluid was discharged; takes milk and beef tea in large quantities, with ice. Evening, pulse 132, temp. 102° ; face less flushed; 11 P. M., has not slept this evening; complains of some colicky pains.

15th. A. M., pain over abdomen has disappeared; sweating; pulse 136, feeble; temp. $98\frac{1}{2}^{\circ}$; did not sleep the previous night; has vomited several times during the night, and stomach still irritable; more sutures removed and more sanious discharges followed; erysipelatous blush is less, though the parts are considerably swollen and the wound looks bad. Her countenance appeared better and respiration was less hurried; sol. of 20 grs. quinia were injected into the colon through artificial opening. 6 P. M., unable to pass her water; a small quantity of dark red smoky urine was drawn and found to contain albumen, with numerous blood and granular casts. Pulse 136 and weak, temp. 102° ; sweating continues, hands and feet cold; tongue dry and brown, anxious countenance, and respiration again hurried; bowels moved through the artificial opening during the day, and she vomited several times; rum was administered, but she vom-

ited it; stimulants were given every hour, some of which she retained. 10 P. M., pulse 150 and can hardly be felt; extremities cold, is sweating profusely; recognizes no one, tosses about the bed.

16th. A. M., pulse 136, temp. 100°; slept but little during the night; looks badly, sweats profusely, respiration less hurried. She asked for a cup of coffee and an egg, which she took with relish; she also takes her stimulants—20 grs. sol. of quinia were thrown into the colon. Wound dressed as usual with carbolic acid; its edges are covered with a gray slough—it is offensive. 12 M., pulse cannot be counted; patient very restless, sweats profusely, respiration hurried and difficult; died quietly at 2 P. M. During this period of five days, the patient was never known to have had any chilly feeling, and after the operation no longer complained of her rectal difficulty.

Three hours after death we were permitted to make but a partial examination of the abdominal cavity only. The colon was found to have been opened behind the peritoneum—that membrane not having been wounded. In this vicinity there had been some slight peritonitis, the gut being slightly adherent to the abdominal walls, and for about two inches there was some injection of its vessels. There was no general peritonitis; the intestines, except that portion of the colon mentioned, were remarkably pale. The cancerous disease had involved all the pelvic organs. The kidneys were deeply congested.

Just about this period several cases of erysipelas and pyæmia made their appearance in the wards of the hospital. This patient, however, was in a private room on the first floor of the hospital, far away from any other patient, save the one whose history is given in our Case II.

CASE IV. *Intractable Stricture of the Rectum.*—John M., æt. 26, single, wood turner, admitted into Roosevelt Hospital February 15th, 1872. Family history good, never has had syphilis. Two years and a half ago had an attack of dysentery, and six months after his recovery, he began to complain of pain in the bowels; this was accompanied by constipation, which caused him to strain violently while at stool, and the feces were passed in scybalous masses. December 25th, 1870, he had a severe attack of enterorrhagia, and for weeks following passed considerable blood. It would occasionally occur during straining at stool, but gradually decreased till February of the same year when he ceased losing blood. Slowly but perceptibly the act of defecation became more and more difficult, accompanied by a dull burning pain, most intense in the middle of the sacrum, and extending down into both thighs. In the rectum there was an annular stricture three and a half inches up the gut, more indurated on the anterior wall, and about three-eighths of an inch in diameter; defecation is imperfectly performed and accompanied by intense pain; he suffers almost constantly from a dull gnawing pain in the sacrum; this pain at times he describes as lancinating. His general condition is bad; is pale and very weak; when he walks he has a peculiar gait which he says is due to the pain in his back; while sitting he constantly assumes different postures to relieve a sense of constriction which he then feels in the rectum. The stricture admitted the tip of the index finger, and for some time was treated by the careful introduction of bougies, and a sedative injection, either of opium or the following R., bismuth. sub. nit. ʒij, glycerinæ, aquæ aa ʒij. Kissengen water was also given for the purpose of rendering the passages more soluble.

May 31. Speculum revealed an ulcerated condition of the bowel, chiefly on the left side of the rectum. The passage of the bougies was now discontinued, owing to the distress they produced.

June 5. Again began to pass blood from his bowels, and at times would have considerable hemorrhages which considerably reduced him, and for the relief of these injections of liq. ferri. persulph. ʒij, aqua ʒviii, were resorted to. Shortly after this date a tumour was discovered in the posterior wall of the rectum, which was ulcerated; through the abdominal walls the lumbar glands were felt enlarged, so also were the inguinal glands. He now was never free from sharp lancinating pains through the pelvis, and to the rectal trouble were now added pain and difficult micturition. The disease was now regarded both by myself and some of my colleagues as in all probability malignant in character. His condition rapidly growing worse, the bowels only being moved by cathartics, he finally consented to the operation of lumbar colotomy on left side, which I did, with the assistance of my colleagues, on the 26th of June, 1872.

Patient rested well that night, being freed from the incessant pain he had so long endured.

27th. A. M., pulse 112, temp. 102°. Urine had to be drawn by catheter; complains of no pain; 5 m of Magendie's solution of morphia given.

29th. Bowels move through the opening in the colon, catheter no longer has to be used.

30th. All sutures removed. Has considerable diarrhœa to-day, though he feels well; movements take place through artificial opening.

July 11. He is sitting up, though his diarrhœa and a urethritis, which were induced by the use of the catheter, continue.

13th. He is out of bed, though feels quite weak. The general condition of this patient was greatly improved by the operation, and for some time he had no recurrence of anything like the old agony he before experienced. Occasionally feces would pass beyond the artificial opening, and then he would be subjected to considerable irritation in the rectum, and complain of a burning sensation in the region of the rectum. This also gave rise to great straining at stool, which caused more or less prolapsus of the bowel at the loin. This was readily reduced, and no serious inconvenience ever followed, the patient readily returning the protrusion himself. He has been the subject of repeated attacks of diarrhœa which at times reduced him very much; he also has suffered considerably from seminal emissions, and an irritable condition of the bladder. In spite of these serious drawbacks, he nevertheless has gained in flesh and strength since the operation.

Oct. 25. A rectal examination reveals a great change in the condition of things; the stricture is much nearer the anus than formerly, and the little finger readily passes through it, and as far as the finger can reach the gut presents a normal feel; nowhere is there any tumefaction or induration to be felt. The edge of the stricture is very thin and to the touch is not very painful.

Without giving the lengthy details of the case as recorded in the hospital record, it is sufficient to state, that attempts have been made at various times to dilate the stricture with bougies, and they have been used up to size No. X; but owing to the discomfort which after a while they invariably gave rise to, and a reappearance of the burning sensation in the rectum, this mode of procedure could only be adopted from time to time. To allay these painful sensations various injections were resorted to, such as nitrate

of silver, iodoform, and the extract of hamamelis virginica. These would all act favourably for a time, and then lose their effect. The most serviceable of all, however, has been the extract of the hamamelis virginica.

Dec. 5. Several sinuses appeared around the artificial opening, these were opened and dressed in the usual way, and some of them have healed.

1873, May 8. He at times complains of pain in the rectum, which is much congested and exhibits spots of ulceration near the anus, a few sinuses near the artificial anus are still open but granulating; he, however, is decidedly better than he has been for months past. During all this time the patient has been up and about the wards (and on two or three occasions has been out of the hospital), with the exception of those periods when he was suffering from sharp attacks of diarrhœa, and even then would frequently rise and walk to the closet when the bowels moved.

CASE V. Stricture of Rectum (Cancer).—Mrs. S. E. D., aged 42; widow, dressmaker, admitted into Roosevelt Hospital Nov. 13th, 1872. Father and mother died of consumption. Patient was married at seventeen, has enjoyed good health till five years ago, since which time she has been losing flesh and strength; has had four children. Since she was nineteen has been subject to hemorrhoids, and her bowels have been more or less constipated. About two years since she began to complain of great fatigue upon the slightest exertion, and constipation alternating with attacks of acute diarrhœa and "cramps" came on. When diarrhœa was not present, feces were passed in small pieces and flattened. Blood and slimy material were also passed. The pain she experienced was bearing down, not lancinating. Soon after this an abscess appeared in the left side of the vagina, just within the orifice, which, after a little, broke, and left behind a recto-vesical fistula, through which feces were discharged during the act of defecation. The desire to go to stool soon became very frequent, and the act attendant with intense pain. On admission she seemed apparently in good health, though complained of feeling very feeble; she was of extremely nervous temperament; slept but little, and her eyes were red from almost constant crying. Appetite pretty good; no cough; heart and lungs normal; urine scanty and dark coloured, but contained no casts or albumen. Examination of rectum revealed the presence of two strictures, the first about one inch and a half from the anus, and the second an inch and a half above the first; the margin of the strictures as well as the mucous coat of the bowel was ulcerated, and the recto-vaginal wall very much thickened, and my impression was that the uterus was also involved in the disease. The strictures admitted the passage of rectal bougie No. 5. The slightest examination of these parts gave rise to severe pain and considerable prostration. Patient was placed upon tonics, and she desiring to obtain whatever relief I could afford to her sufferings, I opened the descending colon in the lumbar region on Jan. 27th, 1873. The gut was readily reached, and a ligature being passed through it, it was drawn well up into the wound, opened, and the injection of warm water which had previously been administered gushed out, together with considerable fecal matter. Through some unaccountable accident the ligature slipped through the walls of the bowel, and the gut fell into the bottom of the wound, and in my attempt to seize it, so as to bring the opened portion of the gut in situ again (which was done in a moment), my finger wounded the peritoneum and passed into its cavity. The wound was dressed in the usual manner, and patient put to bed; the operation being finished about four o'clock, P. M.

7 P. M., patient evidently labouring under great shock, pulse 112, and small; temp. 102°; gave sol. morphia, Magendie, xij gtts.

She did well for the first 24 hours, after which symptoms of local peritonitis about the wound appeared, which greatly subsided under the free use of opium, quinia, and hot fomentations. General condition began to fail at noon, Jan. 29th, when stimulants were freely used; 12 hours prior to fatal result, pneumonia was discovered over the entire right lung, and there was complete consolidation at time of death, which occurred at half past nine, Jan. 29th. No *autopsy* could be obtained.

CASE VI. *Ulceration of Rectum, Stricture; Recto-Vesical Fistula.*—Mr. G. W. H., aged 27, had always enjoyed good health till three years ago, when in April, 1871, he was seized one night with severe pain in the region of the umbilicus, this was associated with fever and tenderness upon pressure over the abdomen, the "bowels were also swollen." He was under the care of a homœopathic practitioner at that time, who told him he had peritonitis, for which he was ordered an injection of water and castile soap, and subsequently took five pills, which moved his bowels. This attack continued for nine weeks, during which his bowels were regular. At the end of that period he gradually got better, and though feeble and emaciated, resumed his work as clerk in the post-office, where he continued until October, 1871, when he had to give up, on account of an attack of fever and ague, and of this he has had repeated attacks up to the time of his death. About March, 1872, he began to experience a constant pain in the region of the bladder; the appetite and strength failed very fast, and the bowels became loose, and in a few months the dejections became slimy but not offensive. He was then seen by Dr. W. R. Gillette, who discovered that the rectum was ulcerated. Shortly after this, wind and small pieces of white material commenced to be discharged from the urethra. Feces soon began to pass through the urethra, and urine by the rectum. From this time he has been more or less a great sufferer, though at times would be able to resume his work for a few days. About March 1st, 1873, he was sent to me by Dr. Gillette, for the purpose of having an operation performed. I found him extremely weak and nervous, and in the habit of taking large quantities of laudanum for the purpose of relieving his pain and diarrhœa, which latter troubled him greatly early in the morning. Upon rectal examination, the bowel was found very much ulcerated, and two slight constrictions were appreciable opposite the promontory of the sacrum.

With the intention of doing colotomy I sent him to the Roosevelt Hospital, March 3d. Here his condition improved and he abandoned the use of laudanum. Desiring to put off the operation for a while longer, he left the hospital March 15th, and went into the country, where his general health was greatly benefited. I now urged him to have the operation done at once, while his general condition was so good, but desiring to return to his work again for a short time, he postponed it. Soon all his old symptoms returned, and with greater severity. At times his agony was frightful, his bladder becoming filled with feces, and the great distress which it caused the patient to void his urine, soon reduced him to a very critical situation. He now desired me to resort to the operation, which I did, for the purpose of affording him some slight temporary relief.

He re-entered the hospital May 9th, 1873, in a most debilitated condition, and with the expectation, both on the part of the patient and myself,

that he could live but a few days. Indeed I had grave doubts if he would survive the operation.

On the afternoon of May 12th, I opened the descending colon in the lumbar region. This time I injected the gut with air previous to the operation, in place of water, as had been my previous habit, and made my incision through the tissue oblique, as suggested by Mr. Bryant. Contrary to my expectation, but very little shock followed the operation, and on the following day he stated he felt better than he had for two weeks. During the first night nothing but urine passed through the artificial opening.

May 13th. There is but little discharge of urine and feces from the urethra, but a slight discharge of pus. Without giving a detailed account of his further daily history, it will be sufficient to state that his general condition markedly improved, and he was relieved of all his old pain. This gratifying condition continued till May 24th, when he had a recurrence of his old ague. This was controlled by quinia; but from this time his appetite failed, and he grew more and more feeble; latterly refusing all food, and died without pain, from exhaustion, June 3d, at 4 P. M., 22 days after the operation.

The *autopsy* showed the intestines firmly bound down in the pelvic cavity from the result of tubercular peritonitis. The mucous coat of the colon was in several places the seat of tubercular ulceration, and the rectum also was extensively ulcerated. Posteriorly there was a communication from the rectum into the bladder, which admitted the index finger; just along-side this opening was another about the same size which opened into a loop of colon, which was firmly adherent to the bladder. The bladder was very small, its walls thickened, and the mucous coat ulcerated and covered with a diphtheritic membrane; the prostate was the seat of an abscess; with the exception of the lungs, the apices of which were the seat of tubercular deposit, the other organs appeared healthy.

The operations resorted to at the present day for the purpose of relieving patients suffering from retention of feces, may be described as those proposed by Littré, Callisen, and Amussat. We believe it was Littré who, in 1710, first suggested the propriety of opening the intestine through the abdominal walls for this purpose.

In these cases he advised that the sigmoid flexure be opened in the left iliac region; the operation being suggested in reference to infants with imperforate rectum. The earliest record that we have of this operation having been done in the adult is by Pilhore, of Rouen, in 1776, but, in place of opening the colon in the left side, he modified the operation by operating in the right iliac region, and there opened the cæcum.

This method of operating upon the adult is now very justly abandoned, unless in exceptional cases, for the same reasons that would render it suitable in infants, viz., anatomical grounds.

To avoid the dangers attendant upon opening the peritoneum, as well as placing the artificial anus in a more convenient location, Callisen suggested the propriety of the operation we now style *lumbar colotomy*. This suggestion was made in 1796, and consisted in opening the descending colon from behind, between the duplicature of the peritoneum, by a *vertical incision* in the left lumbar region.

It appears that in practising this operation upon the dead body of a child, he failed in reaching the intestine without wounding the peritoneum, and abandoned the idea; at least we have no record of his ever having practised it upon the living, and we have the statement of many subsequent writers, that the idea was abandoned, and, for a time at least, its great value was lost sight of. Velpeau in his surgery says, "It is not worthy of being rescued from the oblivion to which the moderns have consigned it. Incomparably more difficult, and not less dangerous, than the preceding [Littre's], it would be also more inconvenient."

The operation which at the present day is chiefly resorted to in the case of adults, bears the name of that of Amussat. While attending the great Broussais for scirrhus disease of the rectum, this skilful surgeon was led to reflect upon the various means that had been proposed for the formation of an artificial anus, and as a result of his studies, he modified the method devised by Callisen, so that he considered it not only a safe but justifiable operation.

While Callisen intended to do the operation on the left colon in the lumbar region, and by a vertical incision through the integument and muscles, Amussat applied it to the ascending colon in the *right* lumbar region, and by a *transverse incision*. In this consists all the differences of the operation as devised by these surgeons. The operation at present called lumbar colotomy, is now chiefly performed in the left lumbar region (though it may be equally applicable to the right side), the situation suggested by Callisen, but by the transverse incision proposed and performed by Amussat. The credit of this operation may therefore with truth be said to belong equally to both Callisen and Amussat.

Though Littre and Callisen never applied their operations to the living subject, this was not the case with Amussat, who first did his operation upon the adult, June 2d, 1839; and in the papers he published upon this subject in the years 1839 and 1841, he relates six cases in which he had performed the operation, and in five of these it was successful. This being a matter of record, and his first case being alluded to by Mr. Erichsen (in his work on *Surgery*), who was present at the operation, we were not a little surprised to find that Mr. Allingham, in his recent work on *Diseases of the Rectum*, referring to Amussat's paper published in 1839, "*On the possibility of establishing an artificial anus in the lumbar region*," remarked, "It is by no means certain, however, that he ever performed the operation." Such little favour had this operation found with surgeons, that at the time of publishing his last paper, Amussat found but six cases, with the exception of his own, where the operation had been performed, three of them in France and three in England.

While referring to these various modes of opening the intestine, we must not omit that of Finc, of Geneva, who for retention of feces opened, in the umbilical region, the transverse colon. It was, however, his inten-

tion to establish the artificial anus in the small intestine, but the transverse colon presented and was opened. (*Brit. and For. Med.-Chir. Review*, 1844, vol. 18.) This was done in 1797. We find in our researches but little concerning this operation. There is a record of two cases where this operation has been performed—one by Kade (*Petersburg Med. Zeitschrift.*, xii. fas. 2, 3, 1867), the other by V. Wahle (*ibid.*, xii. fas. 5, 1867), and in both these cases death resulted.

In the performance of colotomy circumstances will at times arise which will call for a modification in the course and direction of our external incisions. Thus in very corpulent persons, some may prefer to combine the incisions of Callisen and Amussat, or some other line of incision may be indicated, should a curvature of the spine be present, rendering the space between the last rib and crest of the ileum too contracted for the ordinary method to afford room for our manipulations, as occurred in a patient of Mr. Bryant, whose case is given in our collection of cases.

Amussat's method certainly affords advantages over the incision of Callisen, in that it gives us more room; the muscles, being cut across, for the most part, readily retract, and if nerves are exposed they can be more easily avoided, and wounded vessels better controlled. Mr. Bryant has adopted an *oblique incision*, first used, we believe, by M. Bau- dens, in 1842, for the opening of the ascending colon (*Med.-Chir. Trans.*, vol. xxxv. p. 99), and claims that "it gives more room for manipulation when the colon is empty, it takes the line of the nerves and vessels that traverse this part and lessens the risk of their division. It follows the ordinary integumental fold of a patient when assuming the recumbent posture, and thus favours repair, and seems to tend much towards the prevention of the prolapse of the bowel that is always prone to follow such an operation." (*Bryant's Surgery*, p. 369, Am. ed.)

We adopted this incision in one of our cases where the space between the last rib and crest of the ilium was very narrow, and were much pleased with it; as for its tendency to prevent the prolapse of the bowel taking place, sufficient time did not elapse before the death of the patient to warrant us in deciding as to its advantage over the transverse incision. As to its protection of vessels and nerves, we would say, the nerves may readily be avoided, and bleeding will often amount to nothing, at times not a vessel requiring the ligature, whether we adopt either the oblique or transverse incision. In truth it may matter but little what method we shall pursue, the great desideratum in the operation being to avoid wounding the peritoneum.

The operation as now performed is done almost exactly in accordance with the rules laid down by Amussat. At first surgeons would resort to this operation only after constipation had existed for some length of time; then, the bowel being distended by its contents, it would be readily distinguished. Now, since in many cases the operation is resorted to at

an earlier stage of the disease, it becomes of very great advantage to distend the colon. This may be done either by a large warm-water enema or by distending the intestine with air. We believe this was first practised by Mr. Allingham. I have made use of both these methods, and decidedly prefer air to fluid. Its advantages consist both in its cleanliness and the avoidance in a great measure, at times altogether, of a fluid commingled with fecal matter saturating the wound, which often, we think, delays a speedy union of the wounded structures, not to mention the danger, if the peritoneum be opened, of the fluid entering its cavity and giving rise to fatal peritonitis. Should we pursue the practice of Amussat and tap the intestine first with a trocar, this might perhaps be avoided in the case of fluids, but not in every case, as our experience has testified.

Whatever course we pursue, it perhaps may seem superfluous to remark that the injection should not be made till the patient is fully under the anæsthetic, and the rectum then may be plugged with wet lint and maintained in position by the finger of an assistant. Were this plan not adopted, we should but inflict unnecessary pain on the patient, and by the time we came down upon the bowel we might find, not a distended intestine, as we anticipated, but a collapsed bowel, owing to the injection having escaped per anum.

The lumbar region, in which the operation of colotomy is to be performed, is a quadrilateral space, having for its boundaries, above, the last rib, below, the iliac crest, behind, the longissimus dorsi and sacro-lumbalis group of muscles, while anteriorly, it is a vertical line drawn from the centre of the crest of the ilium to the last rib. In this space the colon lies in front of the kidney, separated from it by adipose tissue; the centre of this space corresponds with the deep or fascia transversalis, and is separated from the quadratus lumborum muscle by some adipose tissue. Anteriorly and externally the colon is in contact with the small intestines, and its distance from the spine must vary according as it is distended or contracted. The great point, however, is the relation of its posterior aspect to the peritoneum. Amussat believed that in the adult a lumbar meso-colon never exists, that the colon is free from peritoneum, at least on its posterior third, and that the cellular tissue external to the peritoneum formed its outer sheath. This cellular space, caused by the separation of the layers of peritoneum, begins at the union of the transverse and lumbar colon, having no very distinct line of demarcation below, but usually ceases about the crest of the ilium. Its lateral extent is defined by two of the three longitudinal bands peculiar to the great intestine, one of these bands running in front of the lumbar colon, the other two externally and internally just along the lines where the peritoneum is reflected on the parietes of the abdomen. The condition of these parts will of course vary according to the manner in which we examine the in-

testine, whether it be distended or collapsed. If the abdomen be opened in front, and we draw the colon forward, we sometimes *cause the appearance* of a meso-colon; the practical point being, however, that the extent that is free of peritoneum depends upon the calibre of the gut. When it is much contracted it will be noticed that there will exist a very small interval between the peritoneal folds; when it is distended the small intestines are pushed back, and the portion uncovered by peritoneum will be increased according to the distension of the colon. Now should the colon be opened, its contents escape, but it will not retract as would the small intestines, because it is adherent to the abdominal walls by its posterior surface. Hence, if we carry our incision of the fascia too far towards the anterior spine, we are very liable to wound the peritoneum, especially if the gut be contracted. When the intestine is opened, its edges being confined to the integument, the entire calibre of the gut will not prolapse, as it would in the case of the small intestine; the posterior wall only yielding, thus forming a prolonged tube communicating with the gut. Passing the finger into the gut we do not meet any, or if at all only a slight, salient ridge (*éperon*) opposite the opening. The same disposition may be found on the right side, though here the relations of the peritoneum will be found to be more variable. Amussat contends also that the disposition of the parts is even more favourable to colotomy in early life than in adults. It not being our intention to speak in this paper of the applicability of colotomy in infants, we pass over the noticing of these views.

The patient should be placed in the prone position, slightly inclined to the right side, with a small hard pillow (air cushion) under the left side, this makes the parts more tense and prominent.

Preparatory to the operation, I have always followed the rule laid down by Mr. Allingham in the *St. Thomas's Hospital Reports* for 1870, viz., to mark out the anterior superior and the posterior superior spinous processes of the ilium, then, finding the centre point between these two spines, to draw a vertical line a full half inch behind this centre spot—for beneath this line we shall be sure to find the colon if it be in its normal position. Mr. Allingham remarks that, "from more than fifty dissections and the experience of over thirty operations, I can confidently assert, that the colon is always, normally, situated opposite this point." We are fully prepared to confirm this statement, both from experience on the living, as well as often repeated trials upon the dead subject; and we also agree with the statement of this writer, that the tendency is to look for the colon in front of the spot above indicated. Such being the case, the advantage of first drawing a vertical line over the colon is sufficiently obvious, as in the progress of the operation it affords us an unerring guide.

In following the transverse incision of Amussat, which should be four or five inches in length, and about midway between the crest of the ilium and last rib, let its centre cross the vertical line; while, if we pursue Mr.

Bryant's suggestion, and make an oblique incision, we pass downwards from the lower rib in the direction of the superior spinous process of the ilium, the centre of the incision bearing the same relation to our vertical line as in the preceding method. The various underlying structures should be divided deliberately, and to the extent corresponding with the length of our incision through the skin, until we come down upon the fascia transversalis, or edge of the quadratus lumborum muscle. All bleeding should be arrested as we proceed, and certainly it should be fully stopped before we proceed with the further steps of the operation. Those who for the first time do this operation, may be amazed at the depth this incision may be, especially if there be much adipose tissue present or the muscles well developed, while if these factors be absent in the case, they may reach the deep fascia before they are fully aware of it. Now, if we desire, percussion will readily indicate that we are in close proximity to the intestine. The fascia lumborum with its muscle is readily recognized, and should be carefully divided, when almost invariably there will appear the subperitoneal fat which covers the colon; the amount of this will vary greatly in different individuals, but we have always observed it in some degree. At this stage of the operation, as we have been carefully cutting through this adipose tissue and its connective tissue, in whose meshes it is held, it separating at times in layers as it were, and the intestine shining through, we have had surgeons question if it were not really peritoneum that our knife had passed through. So constant has this adipose tissue been present in the cases, even in thin subjects, that I have operated upon, both in the hospital theatre and in the dissecting room, that, were I not to meet with it, I should at once question whether the peritoneum had not been opened.

A question will naturally arise, how shall we know if it be really the colon we have exposed? *First*, by its distension and greenish hue, if we have previously distended it. *Secondly*, we may perhaps be enabled to distinguish its peculiar bands, though in this we may be deceived, as was shown in my first case reported in this paper, where several observers, as well as myself, felt sure we had recognized them. *Thirdly*, by the following rule which Sir Phillip Crampton said was laid down by Amussat; we quote it as given in the *Dublin Med. Press* for March 5, 1845; and also in the *Am. Journ. of the Med. Sciences* for Oct., 1845, page 494.

"At a meeting of the Surgical Society of Ireland, Sir P. Crampton said that M. Amussat had discovered a sign which if not actually diagnostic (for perhaps it could not always be appreciated) yet bid fair to do much towards removing the difficulty in question, and had actually removed it in M. A.'s last operation; this sign rested on the fact, that the small intestines sustained a motion of alternate ascent and descent corresponding to expiration and inspiration, in which the lumbar colons did not participate; if, therefore, the exposed intestine presented this oscillation, it was small intestine, if it did not, it might be presumed to be the colon."

Fourthly, If we have strictly followed the rule laid down above, we

may be convinced that we are in the normal situation of the bowel, and if it be empty or flaccid, we may safely search for it at the bottom of the wound, with a confidence that our exploration will not be unavailing.

At this stage of the operation the bowel being freed from the sub-peritoneal fat, it may project up into the wound; it is well also to roll it slightly over towards the anterior spine of the ilium so as to bring that portion more into view that is uncovered by the peritoneum. If vomiting take place from the effect of the anæsthetic at this stage of the operation, place the hand over the wound, else the colon may be forced up into the wound with such force as to tear its peritoneal attachments.

Should it be deemed necessary for any reason to inspect the bowel farther before proceeding with the operation, I would strongly counsel against allowing the finger to be passed into the wound on the anterior side of the intestine, else we will be very liable to injure the peritoneum, as has happened to us in one case. Were this accident to occur, we should at once seize with the forceps the torn membrane, and tie it as we do a wounded artery; this practice has been pursued, and no unpleasant effects have followed.

Before opening the bowel, pass two ligatures through it by means of a curved needle, and having drawn the intestine well up into the wound pass these ligatures through the integument of the upper and lower side of the wound and tie them,—then fill the wound either with lint or sponges, now open the bowel either with the knife or scissors between the ligatures. The incision need not, we think, extend for more than an inch in length, and may be either vertical, transverse, or crucial, as it pleases the operator. Thus we prevent the gut, if filled with air, from falling into the bottom of the wound, and its contents there becoming extravasated, and in a great measure prevent cut muscles from being soiled with fecal discharges. At times the bowels will be at once copiously relieved through the opening thus made, while again some hours will elapse before a discharge will occur. Indeed at times it has been found necessary, especially where constipation has long continued, to resort to injections, and even scooping out the hardened feces through this opening, before the bowels become unloaded. Should an evacuation not take place at once, we would advise any further solicitation to be deferred until after the patient has fully reacted from the operation, and the wound has been sealed by plastic material.

The wound through the soft parts should be thoroughly cleansed and brought together by sutures (we prefer here the silver wire, as less liable to induce suppuration), a few fine additional sutures through the bowel confining it to the integuments, completes the operation.

The after-treatment of the wound differs in no respect from that of any other wound. In my cases I have invariably covered the back and side immediately about the wound with lint spread with oxide of zinc ointment,

and in some instances carbolic acid has been added. This is changed as often as it becomes soiled, thus we have prevented chafing which would perhaps otherwise have occurred. After the bowels have been freely moved once or twice, it will be a source of great comfort to the patient to have a pad placed over the artificial opening and a bandage applied; this being readily removed whenever necessity requires it. For the purpose of pad we have used oakum, which, from its odor, feeble power of absorbing the discharge, as well as its unirritating properties, has always proved a grateful appliance. The stitches which have confined the bowel to the integument may be safely removed by the fourth or fifth day, or else left to nature to be cast off. If the case progresses well and the patient feels able, there will be no impropriety in allowing him to sit up in bed by the fifth or sixth day. Indeed we have had him out of bed by that time.

In those cases where constipation has long existed, and copious evacuations have suddenly taken place after the operation, we may find faintness occur or a sense of great prostration complained of,—this is readily relieved by a body bandage, and the administration of brandy and ammonia.

Excessive vomiting has taken place in some cases that have been recorded and are given in our table; so obstinate has this at times proved, that patients have succumbed to its prostrating effects. This has been attributed to the influence of chloroform by those who have lost patients in this manner. We have never had this very troublesome symptom except in one patient, but it subsided after the first twelve hours, though ether is the anæsthetic we have always employed.

With reference to this vomiting, Mr. John Couper, in the *British Medical Journal*, 1869, vol. ii. p. 556, while relating a case of his own which had resulted in death from this cause, remarks that chloroform vomiting has been hitherto a not unfrequent cause of death after colotomy, and states that Mr. Curling records a case of death from this cause fifteen days after the operation, and a like result has happened in the practice of Mr. Maunder. He does not seem inclined to attribute this entirely, however, to chloroform; as he suggests that it may be due to the proximity of the colon and stomach to the solar plexus, both receiving nerves from this source, and the laying open of the colon and traction upon it causing reflex irritability of the stomach. Cases of death from this cause have not been sufficiently frequent however to militate against the operation, and if it be really due to chloroform, we should avoid it, by resorting to the safer anæsthetic—ether.

Soreness and some tenderness may be complained of around the side and over the region of the left iliac fossa for twenty-four hours after the operation, due no doubt to the distension of the colon which our injections produced, the result of the wound and the natural inflammation that follows; this readily subsides, either by itself or by warm fomentations and a dose of morphia.

One other phenomenon, which almost always occurs later in the case, to a variable degree, may manifest itself soon after the operation, and of this we think the patient should be made aware, for, should it take him unawares, it may prove a source of unnecessary alarm, as it did in one of our cases, and so terrified the patient that he fainted—we refer to prolapse of the bowel at the artificial opening; this prolapse may amount to several inches; it causes no trouble, however, as it is readily reduced either by the finger or rectal bougie.

Some have noticed a contraction of the opening take place either during the process of healing or some little time afterward, and affording an obstacle to the ready evacuation of the bowels. We have never observed this in any of our cases. When it shows itself, however, a conical plug, we think, would counteract it; should this not prove sufficient, the opening should be enlarged either by the sponge-tents or the knife; in one case that has been reported the actual cautery was successfully used; this was in a case, if we remember aright, where the opening in the colon was encroached upon by exuberant granulations from the muscular tissues about the wound. Any other indication that might arise calling for special treatment would require only such as would suggest itself to any surgeon. As to the matter of diet we have never felt it necessary to restrict our patients.

While referring to the position of the patient during the operation, we described the one usually selected as the most convenient for perhaps both patient and surgeon. The operation has been done, however, with the patient sitting down and leaning over the back of a chair, ether spray only being used to benumb the parts in the region of the incision.

To the credit of American Surgery, we must not leave the operation of lumbar colotomy without referring to the fact, as recorded in the *Transactions of the College of Physicians, Philadelphia*, vol. 1, 1842, page 99, that on the 15th of March, 1838, Dr. W. Ashmead, of Philadelphia, in the case of a female, aged 38, with scirrhus of the rectum, opened the descending colon in the left lumbar region; "by a vertical incision in the triangular space between the edges of the obliquus externus and latissimus dorsi muscles, without injury to the peritoneum. He was led to do this operation, after considerable study upon the cadaver, believing it to be a superior method to the one proposed by Amussat;" and the paper states that not until two years after his operation did he hear that Callisen had proposed a similar method. His patient did well till the end of ten or twelve days, when diarrhoea set in, and she died of exhaustion on the sixteenth day.

Of the various methods that have been proposed for opening the colon we give the decided preference to that which is known as Amussat's; especially does it appear applicable to those cases which in adults we believe call for the operation of colotomy. Applicable as it is for either the

ascending or descending colou, we prefer the opening to be made in the left lumbar region whenever it is admissible, as some recent cases appear to show that when the right colon is opened, patients emaciate sooner—a fact which shows, perhaps, that the large intestine has greater powers of absorption than is commonly attributed to it. Though not, strictly speaking, coming under the head of colotomy, it may be not amiss to observe in this paper, that where circumstances demand it, the small intestine may be opened, and with results far more favourable than at first thought might be anticipated. This remark is abundantly fortified by the cases that have from time to time been reported in the various medical periodicals, and which we have read while pursuing our study of the literature of colotomy, and, indeed, we may say, in way of parenthesis, that the whole subject of relieving intestinal obstruction by means of abdominal section is deserving of more notice than is at present given to it by our profession, at least in this country, and if the operation be resorted to sufficiently early in the disease, before the vital powers are at their lowest ebb, the result will be more satisfactory.

Under this head we cite the following case, recorded in the *Medical Times and Gazette*, 1869, vol. ii. p. 280, occurring in the practice of M. Dolbeau, at the Beaujon Hospital. The operation was performed on July 3d, 1869, upon a man 32 years of age, who had obstruction of the bowels due to swallowing cherry-stones; there was a swelling in the right umbilical region, and here the ilium was opened; nearly two handfuls of cherry-stones and a large quantity of fluid came through the opening. Patient recovered and, the report states, was well fifty days afterwards.

Dr. Fagge, in his article on intestinal obstruction, in *Guy's Hospital Reports*, for 1868, states that of 75 cases of intestinal obstruction treated at the hospital in fifteen years, 17, about one-fifth, were from bands; and Dr. Brinton, in his work on *Intestinal Obstruction*, found that in 600 cases of obstruction, 31 per cent. were from bands, 43 from intussusception, 17 from stricture, 8 from torsion. In most of these an operation could have afforded relief. In the cases where obstruction was caused by bands, the small intestine was implicated in 95 per cent. Where the difficulty was due to twisting or stricture, 88 per cent. of all the cases he analyzed involved the large intestine.

Intestinal obstruction, it is well known, is divided into two classes—acute and chronic, and each of these, in a measure, has symptoms peculiar to its respective class. We also know that, for the most part, acute cases denote trouble in the small intestine, while chronic cases point to the colon as being at fault. That cases are met with, where the symptoms are so blended that it is difficult, if not impossible, to diagnosticate to which bowel the seat of trouble belongs, is equally true. It is not in the province of this article to discuss the symptoms of these two classes of cases; sufficient is it to state that it will require a most careful consideration on the part of the

surgeon before an intelligent resort to surgery can be brought to bear upon the case.

The peritoneum is still justly held in great respect by surgeons and any encroachment upon it abstained from whenever possible, yet wounds of this membrane are not now held in such dread by the surgeon as formerly, for our means of combating peritoneal inflammation are more efficacious, as the results of our cases show, and the portion of membrane wounded has often lost its peculiar physiological properties and its pathological tendencies before being injured by the knife. Thus, among the cases of colotomy we find many where the peritoneum has been wounded, either purposely, as in Littre's and Fine's operation, or accidentally, as in Amussat's, which have terminated favourably.

Mr. Martland's case, recorded in the *Edin. Med. and Surg. Journal*, vol. xxiv., and also reported in Mr. C. H. Hawkins's excellent paper on colotomy, in vol. xxxv. of the *Medico-Chirurgical Trans.*, of a man aged 44, with stricture, and whose colon was opened in the left iliac region, was living seventeen years after the operation; and this, if not the longest duration of life where colotomy has been done in the adult for the relief of stricture of the rectum, is certainly among the most favourable results of the operation that have been recorded.

The case of M. Reybard, reported also in Mr. Hawkins's collection of cases, shows to a surprising degree what liberties have been taken with both peritoneum and colon. In a man aged 28, with cancer of the sigmoid flexure of the colon, three inches of the left colon were cut out, and the ends sewn together in the left iliac fossa. This patient recovered, and died one year after the operation from the return of the disease, which made its appearance in the same locality six months after the operation.

Of all the cases recorded where the colon has been opened without injury to the peritoneum there are *very, very few* where death can be attributed to the operation. True, cases will be found in both Mr. Hawkins's collection of cases as well as in those in this paper, where death has followed soon after the operation, yet a careful study of these cases will show the statement just made to be correct. No more can death be said to follow as the result of this operation, than that for strangulated hernia, or tracheotomy for the relief of certain cases of asphyxia, or the ligation of a wounded artery at the seat of wound to arrest hemorrhage. On this account, therefore, may we more readily urge patients to avail themselves of the benefits which colotomy holds out, than would otherwise be the case, did the *mortality from the operation* give a different result.

This operation, though originating in France, does not appear to have been frequently resorted to by the French surgeons, and the same may be said in reference to German operators. In our own country, from the few cases reported, one would suppose that our profession was utterly ignorant of the great relief from suffering this operation may afford, and

of its ability, in many cases, of restoring to health and usefulness those sorely afflicted with disease. Among our own surgeons we have been able to find *but thirteen cases* reported, where colotomy has been done, and eleven of these will be found among our tables of cases, though it is very likely that cases may have been overlooked by me in my researches, or that journals containing them have not been within my reach. Be this as it may, the operation in our own land may be said to be in its infancy. The first operation that was done in the United States was, we believe, by Prof. J. M. Bush (*Am. Journ. of the Med. Sciences*, N. S. vol. xix. p. 275) in December, 1847, for cancerous stricture of the sigmoid flexure, the patient, a lady, dying from peritonitis from the cancer, on the fourteenth day after the operation.

The English surgeons have certainly obtained, and are fully deserving of, the great credit of having not only popularized the operation, but perhaps also of extending its field of usefulness, and causing it to be deservedly recognized among the justifiable operations of modern surgery.

Among the names of those who have probably done most to cause the operation to be favourably received, and now so generally done throughout the United Kingdom, though it may be chiefly in London, we would mention the names of Curling, Hawkins, Holmes, Bryant, and Allingham, though we are by no means unmindful of the other hospital surgeons of London who have done much in this direction, so that at present it might be difficult to find one who has not both performed and publicly advocated the operation. To England, therefore, rather than to the home of Amussat, are we indebted for much that we know of the merits and the availability of colotomy in many cases; and that by the labours in this field the sufferings of many patients have been greatly mitigated, all must admit who have ever had any experience in colotomy, or are acquainted with the diseases for the relief of which this operation is resorted to.

If this article, imperfect as it is, should be the means of calling the attention of our profession more fully to this subject, and of inducing them to resort to the operation more frequently than they have heretofore done, we feel *sure* that they will confer a great blessing upon many of their patients, and we will thus be repaid for any labour we have expended in its preparation.

The operation is not only a safe one, when carefully performed, and one which can rarely be said to be the cause of death, but also one which, should any circumstances arise during the performance of the same which seemed to indicate the impropriety of opening the gut, even if the deep fascia be opened, may be abandoned with safety, as is shown by the following case:—

At a meeting of the Royal Medical and Chirurgical Society, June 25th, 1867, Mr. J. C. Forster communicated a case where, for the relief of colloid cancer and obstruction of the bowel, colotomy was attempted; the colon being found flaccid and empty, lying deep in the wound, the incision was closed, and in

four days the parts were perfectly healed. For the further particulars of this case we refer our readers to the April number of the *Am. Journ. of the Medical Sciences* for 1868, p. 544.

Cases are also recorded where the colon has been opened not only in one location, but in two situations at subsequent periods. Thus, in the case of a male patient in the practice of Mr. John Hilton, the colon was first opened in the left loin, after a time a slough came away from the wound, and it closed; eleven weeks afterward the bowel was opened in the left lumbar region. Patient recovered and lived nine months, dying finally from exhaustion. (Case No. 12 of our collection.)

In proof of one of the advantages which colotomy confers upon those suffering from cancer of the rectum, Sir James Paget cites the case (No. 47 of our collection) of a man in whom he had done colotomy for this disease, and says that since the feces had been no longer subjected to the influence of the rectum morphia had completely lost its power of constipating; so the patient could enjoy this drug without becoming constipated. We have never seen this statement confirmed by other operators, nor has our experience verified it, in two cases in which we looked for the result; in one of these cases the bowels were so constipated after it, as to require the use of an enema for their relief.

Colotomy, though first suggested for, and, we believe, first put in practice in, cases of malignant disease of the bowel associated with obstinate constipation, has been amply demonstrated in practice to be equally available, and more successful in future results, in a variety of affections of the bowel other than cancer.

The diseases for the relief of which it has now been done, and for which we advocate its adoption, are those of cancer, intractable stricture of rectum or colon, no matter from what cause, obstruction from the pressure of tumours, which indeed is often but one form of intractable stricture, ulceration of the rectum or colon in some of its phases, and for the relief of vesico-intestinal fistula, especially in the male.

In cancer it was at first adopted only when absolute obstruction to the passage of fecal material had actually taken place, and that after it had existed often for many days, and the sufferings of the patient were extreme; at times, indeed, even when *in articulo mortis*. These cases certainly are not ones to test the merits of an operation, either from a scientific point of view, or as regards the great comfort which is almost sure to follow upon its timely performance. Even at the present day we fear that there are surgeons who are prone to discourage an operation, or in our judgment wait too long before resorting to colotomy.

Not only has the efficacy of this operation been fully proved in just such cases as we have alluded to, but its value has also been shown in those cases which are called painful cancer of the rectum, where even but little obstacle as yet exists to the passage of the feces. To Mr. Curling,

perhaps, more than to any other surgeon belongs the honour of illustrating this fact, and by his writings bringing it to the notice of the profession. That many surgeons have been too backward in realizing the truth of his statements as well as those of many other operators, at least in our own country, we believe to be but too true.

If we wait till the vital powers are almost entirely worn out by long-continued suffering, or until absolute constipation occurs, the shock to the system may at once be so great that the life of the patient is forfeited. We know full well that very many cases are recorded where constipation has existed for weeks, and that, too, associated with cancer of the bowel, the operation has been performed and life prolonged for months. This, however, is no reason why suffering should be allowed to try the vital powers, when a speedy relief may be afforded and the future benefits of the operation greatly enhanced.

Well aware are we that much may be done by medical means for the relief of these patients, and that other operations have been devised and put in practice for their relief. All the other operations, we believe, entail more suffering and danger to the life of the patient, in a majority of instances, and, of course, like colotomy, can only hope to be of but temporary benefit in cases of cancer, and even where they have been done, colotomy will have to be resorted to to give subsequent relief. Some of these operations we have seen tried by others, and in a measure have practised them ourselves; but the impressions we have received are not favourable to their performance in cases of cancer. Indeed, those operations, such as cutting away portions of diseased intestines, or the scooping out diseased masses, as practised and advocated by some of the German surgeons, we cannot but regard unfavourably. These operations being intended as but palliative measures, in this disease, we feel that not only the simplest but the least painful, and the one which exposes the patient to the least risks, should be selected.

Strictures of the rectum are also met with not cancerous in their nature, some of which, as all practitioners well know who have had much experience with stricture, are as deserving of the title intractable as is that class to which we apply this name in the urethra.

In our paper on venereal stricture of the rectum, which appeared in the January number of the *Am. Jour. of the Med. Sciences* for this year, we gave the credit to Mr. Allingham of having first proposed and put in practice the operation of colotomy in this type of stricture. Mr. Curling, in a letter to the editor of this Journal, which appeared in the April number, appears rightly to claim the honour which I had ascribed to Mr. Allingham. It is, therefore, with pleasure that I now correct the error into which I had fallen, and state that Mr. Curling believes he was not only the first to suggest, but also to put in practice colotomy in this class of cases; and in the *London Hospital Reports*, vol. iv., he published two

cases of intractable stricture with ulceration, in which he performed the operation in 1865.

In this class of cases, as with the former, various are the operations that have been employed for their relief; many of these for a time appear to have not only afforded relief but to have cured the patient. Yet the experience of those of the largest acquaintance with these affections, tends to show that the same troublesome condition soon returns. Indeed so exquisite is the pain in many of these cases, caused by the passage of the bougie, that its use not only becomes the source of the greatest injury to the patient, but prevents its use being maintained for the purpose of keeping up the dilated condition of bowel which our operation has temporarily produced. The cause of the bougie often giving rise to this intolerable anguish has been satisfactorily explained, we think, in that fascinating book of lectures, by Mr. John Hilton, on *Rest and Pain*. He truly remarks that often "diseased conditions of the upper, middle, or lower part of the rectum, except the last inch or two, induce but little pain." The reasons for this he fully explains and illustrates in his consideration of the mucous membrane of the rectum.

With these very cases at times it has been found that after colotomy, feces no longer continuing to irritate the strictured gut, the stricture will, as it were, give way, and its irritability cease. This is well illustrated in those cases where there is present more or less ulceration in addition to stricture. But *few* cases of this class occur, we imagine, where these two lesions do not exist. This condition of things was well shown in the fourth case given from my practice. Here, at the time of operation, the tip of the finger could not engage in the stricture, and the slightest touch from the bougie caused intense agony.

For those cases not unfrequently met with where ulceration of the rectum and portion of the colon exists and has continued for some length of time, colotomy, we believe, is especially indicated, not only as a means of mitigating pain and relieving the diarrhœal symptoms, but one that often cures the disease. The causes of these ulcerations are various. We believe, however, that they will be very frequently met with of venereal origin, of which we have spoken in our paper on venereal stricture of the rectum, already referred to. Again we have met with them of tubercular origin, as well as resulting from what has been termed chronic dysentery. In very many of these cases we can but palliate the disease by the means most commonly in use, and in others these resources prove of no avail. The natural result of these cases is often the formation of troublesome fistulæ either about the anus or communicating with the bladder in the male and the vagina in the female, contractions of the bowel, and perhaps perforation of the intestine into the peritoneal cavity and fatal peritonitis. Whatever way life is terminated, it is usually after a long and continued period of suffering. In

this class of cases colotomy acts by deviating the course of fecal material, the ulcerations are no longer constantly irritated by the passages, and, the source of irritation being removed, the parts are placed in a state of physiological rest, so to speak, and as a result, the parts being quieted, Nature cures the disease by her reparative process.

This is by no means theoretical reasoning, as cases abound which show just this condition of things to have taken place. Mr. Allingham, in the last edition of his work on rectal diseases (Am. edit., 1873), cites a case of this disease in a woman upon whom he did colotomy in 1867, and she continues perfectly well. Other writers have also reported most favourable cures, and we ourselves have verified this in our own practice, in a patient a year after the operation. Therefore we can in these cases not only regard colotomy as a palliative measure, but one that may actually cure the disease.

Among those cases where the bowels are obstructed from the pressure of tumours which are in themselves irremovable, or where the cause of obstruction cannot be ascertained, a number of cases favourable to this operation are reported, and which has not only palliated the symptoms, but prolonged life for some time.

To substantiate this point we have given some instances in our collection of cases, and shall cite the following two cases.

Mr. Steele, in the *Med. Times and Gaz.*, Aug. 24, 1872, says truly,

"Many cases terminate fatally of intestinal obstruction, which by timely operative interference would result favourably. A man, 52 years of age, who usually enjoyed good health, lately suffered from diarrhoea. On Jan. 6, unable to relieve his bowels he took castor oil, but without effect; next day tympanites was present, with colicky pains and fecal accumulation in the rectum, with great desire for defecation; cathartic enemata being of no use, the rectum was cleaned out and galvanism used without effect. The vital powers began to fail, but liquid food was taken and retained. On the sixth day he grew suddenly worse and colotomy was done. Flatus at once escaped, and soon afterwards feces. Localized peritonitis, inflammation of the skin, diarrhoea, gastric and intestinal irritation, etc., gave great anxiety for about four weeks. At this time the wound was well healed, but he remained weak. No passage from the rectum had since occurred, but a free discharge of thick mucus had proved troublesome. A swelling high up in the pelvis, which before the operation seemed like feces accumulated in the intestinal coils, afterwards descended and proved to be a tumour and the cause of obstruction." The patient was doing well at the time this report was made, and in conclusion Mr. S. remarks that "when the cause of obstruction is obscure and appears to be due to fecal accumulation, all legitimate means should be used to dislodge the same, but when the cause is mechanical, opiate treatment should be used, and operative means promptly resorted to. When a tumour presses upon the lower bowel, artificial anus is certainly better than a constantly forced passage, and the growth of the tumour will not be near so rapid as if compressed by feces and constantly irritated by their forced passage."

The second case was in the practice of Mr. John Hilton, and we transcribe it from his work on *Rest and Pain*. (Lecture XII., p. 294.)

"The patient was a surgeon of great intellect, who died last November. When I saw him last October twelve-month, with Dr. Jeafferson and Mr.

Hancock, he had had insuperable constipation for thirty-one days. Our joint opinion was that he could not live until the morning. There was great vomiting. We agreed that the obstruction must be somewhere in the neighbourhood of the lower part of the colon, or the higher part of the rectum. We could not detect it with the finger. We thought he would die before morning, and agreed to operate. I operated on the same evening. I made an aperture in the loins; immediately an enormous quantity of feculent matter escaped, and continued to do so for a considerable period, to the great relief of the patient. I had requested that he would not allow it to close up; however, he improved so much that he thought he might do so. The peculiarity of the case was this: that on the fourth day after the operation, from the relief of the distended condition of the colon, he passed motions by the natural anus, and continued to do so for some weeks until a gradual accumulation took place, and then a recurrence of the symptoms. I then operated on him again; the same kind of relief was afforded; and the bowels continued to be opened through the anal aperture up to July or August. He then went back to his business, and saw thirty or forty patients a day. In August last he had symptoms of pain in the hip-joint, and ultimately disease of it, from which he died on the 11th of November, more than twelve months after the first making of an artificial anus. After the first operation he used to complain of great pain in the lower angle of the wound; when I operated the second time, I put the bistoury lower down to divide the nerve which had given him so much pain, and from that time he was comparatively comfortable.

“Upon making a post-mortem examination it was found that there was no cancer. There had been a contraction of the intestine where the sigmoid flexure of the colon joins the rectum. This had produced an obstruction, and consequently a distension and over-loading of the colon. The weight of the feces had caused the colon to descend considerably below its normal position, like an inverted syphon; the feces, therefore, had to ascend, and then could not pass over the fixed point where the constriction had taken place, the weight of the colon making this part an acute angle, and so producing insuperable constipation. When the opening was made into the upper portion of the colon, the weight of feces was taken off, the accumulation in the lower part was then forced upwards by backward peristaltic action and made to pass through the rectum.”

In those deplorable cases of vesico-intestinal fistula, the result of ulceration of the bowel, which at times fall to the lot of the surgeon to treat, and are beyond the reach of the ordinary operations, which in other instances are so successful, colotomy has amply proved itself to be not only the great palliative means to be adopted, but in some instances the radical cure.

The rationale of its action here is precisely similar to that we have described while advocating its use in certain cases of ulceration of the rectum and colon. Few, if any, affections are capable of entailing a greater amount of suffering and wretchedness than these lesions, especially when occurring in the male; and any operation that can at all mitigate the misery of these sufferers, should be hailed with favour both by surgeon and patient.

The earliest case in which this operation was performed and which we have found recorded, is that of Mr. Pennell, in the 33d and 35th vols. of the *Med.-Chir. Trans.* The operation was performed in November, 1849, on a man 50 years of age. The descending colon being opened after the method of Callisen, for a stricture of the sigmoid flexure of the

colon, associated with stricture of the urethra, and recto-vesical fistula, feces and air passing through the urethra in which pieces of bone, etc., were often caught. Urine passed per anum, and by the artificial anus in the first fortnight after the operation. At the time of the last note of the case, which we have seen nearly twenty-two months after the operation, the patient could perform all the functions of life with ease and comfort, and undertook the duties of manager of a very extensive and complicated banking establishment. Mr. Bryant in his *Surgery* says that a gentleman upon whom he did this operation three years ago for vesico-intestinal fistula, follows his avocation without any discomfort. Since this operation many other surgeons have fully established the efficacy of this treatment, and some of their cases are given in our table of cases embodied in this paper—indeed our Case VI. is one of this variety.

We stated that this operation had proved itself particularly applicable to these cases in the male, we were not aware until a few days ago that it had even been resorted to in the female solely for this cause. The following case is the only one in which we have ever heard of its being done in the female, and is reported in the *Med. Times and Gazette* for May 17, 1873, p. 533, by Mr. C. Heath.

This patient had twelve years before suffered from a pelvic abscess following delivery; three years later she passed from the bladder some form of membrane, and from that date continued to pass feces and flatus by the urethra. This gave rise to great pain and inconvenience which was not relieved by any treatment. It being evident that the sac of the old abscess communicated with both bladder and rectum, Mr. H. opened the colon in the left loin in Jan. 1872. The patient was immediately relieved from her sufferings and made a perfectly good recovery; continuing in good health and without any bladder symptoms up to the time of reporting the case.

In these operations the question naturally presents itself: If the disease for which colotomy is performed is eventually cured thereby, cannot the artificial anus be closed by some subsequent operation? We know that cases have occurred where nature has closed the artificial opening made by colotomy, and reasoning by analogy from those cases of artificial anus which have occurred from other causes and been cured by operation, we should be led to answer at once in the affirmative. These cases certainly seem to present fewer obstacles to an operation, there being no, or a very slight, tongue-like projection (éperon) to be removed as in those cases which have resulted from injury or disease. But what has been the experience of practice in these cases? Mr. Allingham states in his work, already referred to, that he has made attempts to close this opening, but as yet without success, and this also, he states, has been the experience of Mr. Bryant. Though knowing of no successful attempt, we should not be prevented from making the trial did a suitable case present itself.

In these cases of colotomy, patients for a time after the operation will be troubled with some fecal matter getting below the artificial opening, and giving rise to unpleasant symptoms, such as tenesmus, etc. This may at

times be relieved by enemata, either through the artificial opening or the natural passage.

Objections that have been raised against this operation may be thus briefly stated and answered.

First. The uncertainty of our diagnosis in certain cases. That this is very true we shall not dispute; but how is it with other operations that are constantly performed where our diagnosis is no more certain than it is in many cases of intestinal obstruction?

Second. The dangers of the operation. That colotomy is entirely free from danger, and that cases do not arise which may greatly embarrass and perplex the operator, we do not assert. But in the hands of a good anatomist and careful operator, the difficulties of almost every case will be overcome, and for the majority of cases the operation will be found easy, and, as far as the life of the patient is concerned, safe.

Third. The condemning a patient to be the subject of an artificial anus. This objection is one that patients would often naturally make, and it is one that surgeons, who have had but little or no experience with the artificial opening caused by colotomy, are prone to advance. The testimony, however, of very many of these patients, as well as of the surgeons who have had the largest experience with these cases, is that it really is of but comparatively little inconvenience. These patients are not troubled with a continued discharge of either flatus or feces from the artificial anus, a suitable pad being sufficient to prevent such a condition of things and allowing them to pursue their vocations, and mingle with people without disclosing their ailment. Indeed, in some cases, the bowels have been found to act as regularly and not more frequently than when this condition did not exist. An artificial anus, under the most favourable conditions, cannot help being a source of inconvenience in various ways, but when these objections are weighed in the balance against ulterior results, we cannot but think they should be found wanting.

The following eighty cases of colotomy, which we have collected and tabulated after considerable labour, comprise all those we have been able to find from 1853 to the present year. Previous to the year 1853, Mr. Cæsar H. Hawkins had collected and analyzed 44 cases in his masterly paper, which appeared in the 35th vol. of the *Trans. of the Royal Med. and Chirurg. Society of London*. In our paper, as well as that of Mr. Hawkins, it will be observed that there are given a few cases where the bowel has been opened in other places than in the lumbar region, and we believe that in certain cases we are justified in opening the small intestine.

Of these cases we find that where the sex is given there were :—

Males, 44.

Females, 34.

The descending colon was opened by Amussat's method in 74 cases.

" ascending " " " " " " " 2 "

Callisen's method was adopted in 1 case.

The colon was opened in the left loin in 1 case (12).

" " " " twice in same patient in 1 case (12).

" jejunum in left lumbar region in 1 case (63).

" ilium " right " " " 1 " (6).

" cæcum " " iliac " " 1 " (57).

Where the result of the operation was known :—

Recovered, 54.

Died, 23.

Thirteen of the cases that are recorded as fatal, we do not believe should be attributed to the operation, viz., cases Nos. 2, 5, 6, 8, 9, 10, 14, 18, 25, 28, 32, 38, 65.

The shortest period of survival after the operation was 16 hours.

The longest period of survival after the operation was 6 years, and the case was then doing well.

The peritoneum was stated to be wounded in 7 cases, of which 4 died ; one of these, however, revealed no peritonitis at the *autopsy*, and 3 recovered.

The operation was done for vesico-intestinal fistula, with or without stricture of the rectum, in 12 cases, of which 11 recovered from the operation, and one (32) is recorded as fatal, though he evidently did not die from the operation.

The shortest period of survival after the operation was 3 weeks.

" longest " " " " " " " 2½ years.

Where obstruction of the bowel was caused by the presence of tumours, there are 3 cases, of which 2 recovered, and the result in 1 is not stated.

The period of survival after the operation in these cases was :—

1 case was alive and doing well 15 months afterwards.

1 case was alive 4½ years afterwards ; and in 1 case it is not stated.

A perusal of these cases will show that in a large proportion of them the operation was not done till the vital powers had nearly become exhausted from long-continued suffering, and with this fact taken into consideration, the results of the operation should, we think, be regarded as encouraging.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
1	Female	40	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Feb. 1856	Descending colon, by Amussat's method	Thirty days' obstruction from carcinomatous stricture in the rectum
2	Male	40	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Sept. 1856	Descending colon, by Amussat's method	Ten days' obstruction from carcinomatous stricture in the rectum
3	Male	45	G. R. Henry, Burlington, Iowa, N. Am. Medico-Chir. Review, vol. i.	Dec. 10, 1856	Descending colon, by Amussat's method	Stricture of rectum
4	Male	28	Mr. Solly, Lancet, vol. i., 1856	March 15, 1856	Descending colon, by Amussat's method	Stricture of rectum four inches above anus
5	Male	49	Mr. Erichsen, Lancet, vol. i., 1857	Nov. 19, 1856	Descending colon, by Amussat's method	Cancerous disease of rectum, had been suffering with rectal trouble for four years
6	Male	Not given	Jobert (de Lamalle), Lancet, vol. i., 1857	April, 1857	Ilium, in right lumbar region, by Amussat's method	Intestinal obstruction
7	Male	49	Mr. Solly, Lancet, vol. i., 1857	October 1, 1857	Descending colon, by Amussat's method	Stricture of rectum two inches above the anus, had existed for eighteen months, total obstruction for three days
8	Female	56	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Jan. 1859	Descending colon, by Amussat's method	Thirty days' obstruction from carcinomatous disease at the upper part of the rectum
9	Female	39	Sir Henry Thompson, Lancet, vol. i., 1859	March 13, 1859	Descending colon, by Amussat's method	Constipation for forty-one days. Stricture
10	Female	48	Thomas Bryant, Lancet, vol. i., 1860	October 6, 1859	Descending colon, by Amussat's method	Stricture of rectum, absolute constipation for 3 weeks
11	Male	45	N. Ward, London Hosp. Repts., vol. ii.	Aug. 1860	Descending colon, by Amussat's method	Carcinoma of rectum, and severe suffering caused by fecal discharges
12	Male	Not given	John Hilton, Guy's Hosp. Repts., vol. xiii., 1868	Nov. 15, 1860; Feb. 1861	Colon opened in the left loin, feces passed per anum, after a slough came away, wound closed, and eleven weeks afterwards bowel was opened in the left lumbar region	Stricture eight inches from anus, not cancerous, and obstruction to feces
13	Male	60	Mr. Adams, London Hosp. Repts., vol. ii.	Dec. 1861	Descending colon, by Amussat's method	Carcinomatous stricture at upper part of rectum, 18 days' obstruction
14	Female	52	Mr. Critchett, Lond. Hosp. Repts., vol. ii.	Aug. 1862	Descending colon, by Amussat's method	Carcinomatous stricture of the rectum, seventeen days' obstruction
15	Female	36	T. B. Curling, Lond. Hosp. Repts., vol. ii.	Feb. 1863	Descending colon, by Amussat's method	Painful cancerous tumour in rectum, communication with vagina, and five days' obstruction
16	Male	Not stated	Henry B. Sands, N. Y. Med. Journal, April and Dec. 1865	Dec. 26, 1864	Descending colon, by Amussat's method	Chronic intestinal obstruction following dysentery, stricture opposite promontory of the sacrum
17	Male	29	T. B. Curling, Lond. Hosp. Repts., vol. ii.	July, 1864	Descending colon, by Amussat's method	Painful cancerous stricture of rectum
18	Male	27	Mr. Durham, Lancet, vol. ii., 1864	August 23, 1864	Right colon, by Amussat's method	Cancerous constriction of ascending colon
19	Male	33	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Not given	Descending colon, by Amussat's method	Intractable stricture of rectum one and a half inches above anus
20	Male	53	T. B. Curling, Lond. Hosp. Repts., vol. ii.	April, 1865	Descending colon, by Amussat's method	Painful cancerous stricture of rectum

Result.	Period of survival.	Cause of death and remarks.
Recovered	2 months	Wound healed in five weeks. From exhaustion consequent on the disease.
Fatal	13 days	Exhaustion from persistent vomiting produced by chloroform.
Fatal	10 days	Third day after operation had severe venous hemorrhage from the wound (came from a portion of cellular tissue around the kidney though that organ was uninjured), two days elapsed before he rallied from the loss of blood; died from exhaustion.
Recovered	Not stated	Was preceded by diarrhoea and dysentery for some months before the operation, obstruction would not admit a small elastic catheter.
Fatal	3 days	Exhaustion, advanced granular degeneration of the kidneys.
Fatal	Following day	Autopsy showed that the opening had been made in the lower part of the ilium and that the knuckle of bowel was already adherent to the lips of the wound. Cause of obstruction supposed to have been due to an unusual distension of the sigmoid flexure, by means of which the bowel had turned upon itself and formed a fold, which presented an obstacle to the course of the fecal matter.
Recovered	Nearly 6 weeks	Upon hearing some bad news he fainted, then fell into a state approaching collapse in which he died November 12.
Fatal	16 hours	Peritonitis, which had set in before operation.
Fatal	3 days	Ulceration and perforation of colon above the seat of a stricture, which was at the sigmoid flexure. No appearance of its being malignant. Patient was about five months pregnant, miscarried the second night after the operation.
Fatal	13 days	Inanition, was relieved from all pain by the operation.
Recovered	8 months	Exhaustion from extension of disease.
Recovered	9 months	Exhaustion.
Recovered	2 years & a half	From exhaustion consequent on the disease.
Fatal	3 weeks	Exhaustion.
Recovered	3 months	Exhaustion consequent on disease.
Recovered	Less than 4 months	Died night of May 1, 1864. On 3d of March he again entered the N. Y. Hospital with symptoms pointing to obstruction above the artificial opening. Autopsy showed that the symptoms patient suffered from were due to tubercular peritonitis. No ulceration of mucous coat of the colon was present. Calibre of small intestines were narrowed, but nowhere was there complete obstruction. In some places they were so constricted as to give passage only to a full-sized steel sound. The large intestine, with exception of the lower part of sigmoid flexure and rectum, was but slightly thickened and its calibre was normal.
Recovered	9 months	Exhaustion consequent on the disease.
Fatal	6 days	Exhaustion from long-continued disease, was greatly relieved by the operation.
Recovered	Six years, was alive when the case was reported	There was a great tendency for a time to suppuration about the wound. On the twenty-third day after the operation a slough was seen at the deepest part of the wound, it was drawn out and measured five inches long by two inches in breadth, and was found to be a portion of the gut itself, probably some of the sigmoid flexure.
Recovered	5 weeks	Exhaustion from rapid advance of disease.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
21	Male	26	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Feb. 14, 1865	Descending colon, by Amussat's method	Intractable stricture of rectum
22	Female	29	T. B. Curling, Lond. Hosp. Repts., vol. iv.	April 4, 1865	Descending colon, by Amussat's method	Intractable stricture and ulceration of rectum
23	Male	51	Timothy Holmes, Med.-Chir. Trans., vol. xlix; Lancet, April 14, 1866; Lancet, June 19, 1867	June 17, 1865	Descending colon, by Amussat's method	Patient suffered from symptoms of obstruction of the bowels for four years, also recto-vesical fistula
24	Male	46	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Sept. 1865	Descending colon, by Amussat's method	Obstruction of rectum from a hard solid growth which appeared to spring from the prostate. Bowels had not been moved for twenty days
25	Female	68	T.B. Curling, Trans. Lond. Path. Soc., vol. xvii., 1866	Nov. 14, 1865	Descending colon, by Amussat's method	Colloid cancer of rectum
26	Female	41	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Dec. 1865	Descending colon, by Amussat's method	Cancer of rectum
27	Male	42	Mr Pemberton, Med. Times and Gaz., July 8, 1865	Not given	Descending colon, by Amussat's method	Scirrhus of rectum and both orifices of stomach
28	Female	47	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Jan. 12, 1866	Descending colon, by Amussat's method	Obstruction from carcinomatous stricture of colon
29	Male	20	T. B. Curling, Lond. Hosp. Repts., vol. iv.	Jan. 31, 1866	Descending colon, by Amussat's method	Painful cancer of rectum
30	Female	43	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	March 26, 1866	Descending colon, by Amussat's method	Cancer of rectum and vagina
31	Male	54	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	May, 1866	Descending colon, by Amussat's method	Cancer of rectum and ulceration into bladder
32	Male	52	C. F. Maunder, Lond. Hosp. Repts., vol. iv.	August 21, 1866	Descending colon, by Amussat's method	Cancer of rectum and recto-vesical fistula
33	Male	35	Geo C. Blackman, Cincinnati Journ. of Med., Jan. 6, 1866	Oct. 15, 1866	Descending colon, by Amussat's method	Cancer of rectum, constipation for ten days
34	Male	34	R. B. Carter, London Hosp. Repts., vol. iv.	Nov. 6, 1866	Descending colon, by Amussat's method	Cancer of rectum
35	Female	54	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Feb. 1867	Descending colon, by Amussat's method	Obstruction, supposed to be due to cancer of sigmoid flexure
36	Male	49	Thos. Bryant, Brit. and For. Med. Chir. Rev., vol. xliii., 1869	April 27, 1867	Descending colon, by Amussat's method	Vesico-intestinal fistula
37	Female	46	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Sept. 1867	Descending colon, oblique incision, as done by Mr. Bryant	Cancer of rectum, constipation for thirty-five days
38	Male	70	Mr. Trevor, Lancet, Nov. 16, 1867	Sept. 31, 1867	Descending colon, by Amussat's method	Stricture of sigmoid flexure, not cancerous. But little had passed the bowels for a fortnight
39	Female	24	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Nov. 1867	Descending colon, oblique incision, as done by Mr. Bryant	Venereal stricture of rectum
40	Male	58	M. Verneuil, Med. Times and Gaz., September 4, 1869, Lariboisière Hosp.	Aug. 1869	Sigmoid flexure, left groin one inch above Poupart's ligament	Stricture and ulceration of rectum
41	Male	64	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Feb. 11, 1868	Descending colon, by Amussat's method	Cancer of rectum

Result.	Period of survival.	Cause of death and remarks.
Recovered	Alive Feb. 22, 1867, 2 years	Successfully relieved.
Fatal	8 days	Exhausted from persistent vomiting, probably due to chloroform.
Recovered	16 months	Was in good health and in a condition of tolerable comfort, with evidence of considerable contraction, if not complete closure, of the fistula. (<i>Lancet</i> , April 14, 1866.) Died Oct. 1866. (<i>Lancet</i> , June 19, 1867.) He died from disease in the cæcum similar to that he had in the sigmoid flexure, for which the operation was performed. About fifteen months after the operation feces again appeared in the urine. The opening from the sigmoid flexure into the bladder was not from malignant disease, but, as far as could be determined, from ordinary ulceration; the same action had taken place in the cæcum, and thus the operation from that time was rendered nugatory.
Recovered	4 years & 6 months	Exhaustion and involvement of the bladder in the disease. For quite four years was in considerable comfort.
Fatal	11 days	Exhaustion. At the time of operation her symptoms were most urgent. She rallied well from the operation and took abundance of food, went on well till the eighth day when she began to sink. All her symptoms were relieved by the operation.
Recovered	3 months & 2 weeks	Exhaustion from spread of disease; wound in loin did not heal kindly. Great relief from pain.
Fatal	Till the following day	Exhaustion.
Fatal	6 days	Exhaustion, obstruction had lasted for twelve days. Owing to a deformity of the spine the operation had to be modified.
Recovered	10 months	Exhaustion and progress of disease. Sufferings greatly relieved.
Recovered	19 months	Exhaustion. Was greatly relieved and could attend to her household duties.
Recovered	10 weeks	Exhaustion from spread of disease. In this case only temporary relief could be expected, and this was certainly realized.
Fatal	16 days	Exhaustion. Did not expect to prolong life longer; operation relieved his symptoms.
Recovered	Doing well three months after the operation	Patient was a colored man; he was relieved from pain and gained flesh.
Recovered	16 months & 5 days	Operation performed by aid of ether spray, patient sitting down and leaning over the back of a chair.
Recovered	9 weeks	Exhaustion. Had no acute pain but a low form of peritonitis set in after the operation, and she took but little nourishment. Autopsy showed considerable narrowing of the gut, together with a nearly circular ulcer one inch and an eighth in diameter, situated ten inches from the anus. It did not appear to be cancerous.
Recovered	4 months	June 29, another opening into the bladder took place, this from the small intestine, and the old symptoms came on and he died from exhaustion. The opening from the rectum that had been present had healed.
Recovered	5 months & 1 day	Exhaustion from spread of disease. During latter days of her life suffered greatly from vomiting.
Fatal	7 days	Pneumonia. Was in a wretched condition and had vomited blood before the operation.
Recovered	Was well at time of report, 3 years	Four months after operation had gained ten pounds. The ulceration of the bowel which had been present was healed. Stricture round and tight.
Fatal	30 hours	Died in a typhoid state. Autopsy showed no peritonitis, there was a slight twisting of sigmoid flexure.
Fatal	11 days	Erysipelas of wound and back.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
42	Male	49	Thomas Bryant, Med. Times and Gaz., Feb. 1868	April 27, 1868	Descending colon, by Amussat's method	Vesico-intestinal fistula
43	Male	59	Mr. Maunder, Brit. Med. Journ., March 6, 1869	July 10, 1868	Descending colon, by Amussat's method	Vesico-intestinal fistula
44	Male	26	Mr. Allingham, St. Thomas's Hospital Repts., vol. i., 1870	Nov. 1868	Descending colon, by Amussat's method	Stricture of rectum and ulceration
45	Female	40	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	Feb. 2, 1869	Descending colon, by Amussat's method	Stricture of rectum, pain and difficulty in defecation
46	Female	64	Prescott Hewett, Lancet, April 24, 1869	Apr. 7, 1869	Descending colon, by Amussat's method	Obstruction from cancer of rectum
47	Male	Not stated	Mr. Paget, Lancet, June 11, 1870	June, 1869	Descending colon, by Amussat's method	Malignant disease of rectum
48	Male	64	Thomas Bryant, Trans. Clin. Soc. of London, vol. v., 1872	August, 16, 1869	Descending colon, by Amussat's method	Recto-vesical fistula
49	Female	Not stated	John Couper, Brit. Med. Journ., Nov. 20, 1869	1869	Descending colon, by Amussat's method	Stricture of rectum three and a half inches from anus, produced by an abscess of the ovary, five years' standing
50	Male	Not stated	Mr. Callender, Lancet, Nov. 27, 1869	1869	Descending colon, by Amussat's method	Cancer of rectum, sudden obstruction
51	Not stated	50 to 60	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Malignant stricture of rectum, complete obstruction for many days, with <i>vesico-intestinal fistula</i>
52	Female	50 to 60	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Non-malignant ulceration high up, with <i>vesico-intestinal fistula</i>
53	Female	68	Mr. Maunder, Med. Times and Gaz., Feb. 13, 1869	..	Descending colon, by Amussat's method	Tumour high up in rectum, producing complete obstruction for ten or twelve days
54	Male	34	G. W. Callender, Trans. Clin. Soc. of London, vol. iii., 1870	Sept. 6, 1869	Descending colon, by Amussat's method	Cancerous stricture of rectum two inches above the anus, with obstruction of the bowels
55	Male	Not given	Mr. Maunder, Med. Times and Gaz., Jan. 15, 1870	Dec. 27, 1869	Descending colon, by Amussat's method	Malignant disease of rectum, partial obstruction
56	Female	Not given	Mr. Maunder, Med. Times and Gaz., Jan. 15, 1870	..	Descending colon, by Amussat's method	Painful malignant disease of rectum, with not unfrequent hemorrhages, partial obstruction

Result.	Period of survival.	Cause of death and remarks.
Recovered	4 months	Operation gave great relief, urine became clear. June 20. Abdominal pain came on in region of the bladder and some constitutional disturbance. June 25. Symptoms relieved by a sudden rush of feces into the bladder and their passage with the urine, feces were thin and evidently from the small intestine. From this time he sank and died August 27. Autopsy showed that the bladder and large and small intestine communicated with an abscess at the base of the bladder, and all signs of ulceration of the rectum, which formerly existed, had disappeared, with exception of the fistulous opening into the abscess. Left kidney disorganized and full of greenish pus, as were the ureter and bladder.
Recovered	6 weeks	Exhaustion, result of previous suffering he had endured months before coming under Mr. M.'s observation; he had suffered from diarrhoea for months and was greatly emaciated; pain intolerable, more especially on micturition. Operation gave the greatest possible relief from his suffering. Autopsy showed a large but simple ulcer at lower part of sigmoid flexure, and in the centre of it a small perforation communicating with the bladder. It was regretted that the operation had not been performed before the vital powers were worn out by the agony which this man had evidently endured.
Recovered	9 months	Was very much better for six or seven months, then had a severe hæmoptysis after catching cold, and died of phthisis.
Recovered	Reported a few days after operation	Wound found to have healed around the artificial opening on the third day.
Recovered	2 weeks after operation was going on most favourably	At time of operation there was stercoraceous vomiting. Colon found much contracted; complete relief by operation.
Recovered	One year, afterwards well	Mr. Paget remarks, in connection with this case, that since the feces had been no longer subjected to the influence of the rectum, morphia had completely lost its power of constipating, so the patient could enjoy this drug without becoming constipated.
Recovered	2 years & 6 months after was well	Suffered but little inconvenience from the artificial anus. No evidence of disease beyond the fistula, which gives no trouble.— <i>Med. Times and Gaz.</i> , March 16, 1872.
Fatal	40 hours	Vomiting from chloroform. Mr. Couper remarks that chloroform vomiting has been hitherto a not unfrequent cause of death after colotomy, and states: Mr. Curling records a case fifteen days after the operation, and that it has also happened to Mr. Maunder. He supposes it to be due to proximity of colon and stomach to the solar plexus, both receiving nerves from this source, and the laying open of the great gut and traction upon it causes reflex irritability of the stomach. In this case the peritoneum was opened during the operation but at once closed. No peritonitis found after death.
Recovered	2 months, after was doing well	All urgent symptoms removed, and entire relief from great local pain from which he had suffered.
Recovered	A few weeks	Exhaustion.
Recovered	A few weeks	Exhaustion.
Recovered	15 months after operation was alive	Nearly twelve months after was in fair health, nothing had passed per anum since operation. Fifteen months after operation was alive.— <i>Med. Times and Gaz.</i> , Jan. 15, 1870.
Recovered	2 months, afterwards health was greatly improved	Pain relieved.
Recovered	5 months & 8 days	Uræmic convulsions. Depth of wound was very great. He believes he wounded the peritoneum, as something like omentum protruded, replaced this and tied the wounded peritoneum up like you tie an artery, then, by dividing the quadratus lumborum and erector spine muscles the colon was found. Artificial opening contracted considerably by the sprouting up of muscular tissue around the wound. This was treated successfully by the actual cautery.
Recovered	Not stated	The lower portion of the kidney embarrassed the operation.

No.	Sex.	Age.	Name of operator and where reported.	Date of operation.	Intestine opened and method of operation.	Cause of operation.
57	Male	43	L. Thomas, Gaz. des Hôpitaux, No. 70, 1869	..	Cæcum (Finé)	Occlusion of the colon, with obstruction for 33 days
58	Male	28	Dr. Thomas B. Bott, Brit. Med. Journ., Nov. 19, 1870	Feb. 21, 1870	Descending colon, by Amussat's method	Intestinal obstruction, due to an injury about the anus from the handle of his spade, which he had fallen against in the summer of 1868
59	Female	57	Thos. Bryant, Lancet, June 11, 1870	May 31, 1870	Descending colon, by Amussat's method	Cancerous stricture of rectum two inches above anus
60	Male	49	Thos. Bryant, Med. Times and Gaz., March 16, 1872	July 5, 1870	Descending colon, by Amussat's method	Recto-vesical fistula
61	Female	Not stated	Mr. Wheelhouse, Brit. Med. Journ., Nov. 12, 1870	Oct. 27, 1870	Descending colon, by Amussat's method	Obstruction of bowels for three weeks, due to presence of a uterine tumour upon the rectum
62	Female	Not stated	C. Heath, Medical Times and Gaz., March 4, 1871	Feb. 4, 1871	Descending colon, by Callisen's method	Malignant stricture of rectum, absolute obstruction had been present for a week
63	Female	39	Erskine Mason	May 8, 1871	Jejunum, by Amussat's method	Venereal stricture of rectum
64	Female	61	Erskine Mason	May 27, 1871	Descending colon, by Amussat's method	Cancer of rectum, uterus, and vagina
65	Female	56	Mr. Savory, Lancet, May 27, 1871	1871	Ascending colon, by Amussat's method	Malignant stricture eight inches above anus
66	Male	58	Mr. Savory, Lancet, May 27, 1871	1871	Descending colon, by Amussat's method	Rectum obstructed by a soft mass, on one side of which a small aperture could be felt
67	Female	37	Erskine Mason	June 12, 1871	Descending colon, by Amussat's method	Cancer of rectum
68	Female	54	Z. E. Lewis, Communicated	July 26, 1871	Descending colon, by Amussat's method	Occlusion of rectum from cancer extending from uterus
69	Female	32	Henry B. Sands, Communicated	Aug. 7, 1871	Descending colon, by Amussat's method	Cancerous stricture of rectum
70	Male	38	Thos Bryant, Med. Times and Gaz., June 15, 1872	Oct. 10, 1871	Descending colon, by Amussat's method	Stricture of rectum
71	Male	47	Mr. Howse, Medical Times and Gaz., Oct. 26, 1872	Nov. 10, 1871	Descending colon, by Amussat's method	Epithelioma of rectum
72	Female	Not stated	C. Heath, Medical Times and Gaz., May 17, 1873	Jan. 1872	Descending colon, by Amussat's method	Recto-vesical fistula, result of puerperal abscess
73	Male	41	Mr. Maunder, Med. Times and Gaz., Feb. 24, 1872	Jan. 26, 1872	Descending colon, by Amussat's method	Malignant stricture of rectum
74	Female	25	Mr. Maunder, Med. Times and Gaz., Feb. 24, 1872	Jan. 31, 1872	Descending colon, by Amussat's method	Venereal stricture of rectum
75	Female	25	Mr. Hulke, Lancet, July 20, 1872	March 6, 1872	Descending colon, by Amussat's method	Venereal stricture of rectum
76	Male	Not stated	Mr. Hulke, Lancet, August 3, 1872	June 5, 1872	Descending colon, by Amussat's method	Carcinoma of the rectum
77	Male	52	Charles Steele, Med. Times and Gaz., 1872	June 6, 1872	Descending colon, by Amussat's method	Intestinal obstruction
78	Male	26	Erskine Mason	June 26, 1872	Descending colon, by Amussat's method	Intractable stricture of rectum
79	Female	42	Erskine Mason	Jan. 27, 1873	Descending colon, by Amussat's method	Cancerous stricture of rectum
80	Male	..	Erskine Mason	May 12, 1873	Descending colon, by Amussat's method	Stricture of rectum, ulceration, and recto-vesical fistula

Result.	Period of survival.	Cause of death and remarks.
Recovered	..	Had had dysentery when 15, and had frequent attacks of colic and constipation.
Recovered	8 months, after operation was well	.....
Recovered	Not stated	Operation done to relieve pain.
Recovered	1 year & 6 months after operation he was well	Had been passing urine and feces through the urethra for three years, and was much reduced in health, and most miserable from local pain. Was out four weeks after operation. Six months later reported he was getting fat and free from all pain.
Not stated	..	.....
Not stated	..	Had advised colotomy a long time before, but patient did not accept it.
Fatal	4 days	Erysipelas and uremia. See case No. I in this paper.
Recovered	3 months	See case No. II. in this paper.
Fatal	2 days	Exhaustion. Had suffered from constipation for sixteen days and from vomiting for about fifteen days. Obstruction thought to be in colon at time of operation.
Recovered	Not stated	Was discharged from St. Bartholomew's Hospital on the twenty-sixth day in a good condition.
Fatal	5 days	Septicæmia. See case III. in this paper.
Recovered	4 months & 5 days	Peritonitis from extension of disease. No autopsy obtained. Operation gave immediate relief to her symptoms and subsequent comfort so far as action of the bowels was concerned.
Recovered	About six months	Pain and exhaustion. Patient had but one fecal evacuation in ninety days preceding the operation. Suffered intense pain before the operation from fecal accumulation. The intestines were greatly distended and their outlines could be seen through the attenuated abdominal walls. Operation afforded marked temporary relief.
Recovered	..	.....
Recovered	..	Oct. 13, 1872. Was still living and expressed himself thankful for the relief afforded by the artificial opening.
Recovered	16 months	Was in good health at time of report.
Fatal	43 hours	Exhaustion. Patient was very far gone at time of operation. Operation relieved his symptoms. No autopsy obtained.
Recovered	..	Was doing well Feb. 18, 1872.
Fatal	7 days	Peritonitis. Peritoneum was opened in the operation. Autopsy showed diffuse suppuration between the oblique muscles, extending upwards on lower ribs and over front of the belly to groin, downwards along psoas and iliacus muscles, sub-peritoneal.
Recovered	..	.....
Recovered	..	.....
Recovered	Alive a year after operation	See case IV. in this paper.
Fatal	..	Pneumonia and peritonitis. See case V. in this paper.
Recovered	3 weeks	See case VI. in this paper.

In order to give a more complete *résumé* of the operation of colotomy, we append the following tables from Mr. Hawkins's 44 cases, which are taken from his paper.

Of these 44 cases of artificial anus, it is known that

	6 died within the first 24 hours.
11	" " " " 48 "
13	" " one week.
17	" " a fortnight.
19	" " 3 weeks.
21	" " 5 weeks.

So that only 23 patients can be considered as having recovered from the operation; but as the operation in one case was performed for the cure of fistulæ in ano, in which, therefore, the dangers of protracted constipation were absent, it will be fair to state, that there were 21 deaths and 22 recoveries. But let us trace the 22 recoveries a little further; first, we find that 5 died within six months, viz. :—

1	in 2 months.
1	in 3 "
1	in 3½ "
1	in 5 "
1	in 6 " and 10 days.

Eight are either alive or are left uncertain under a year, viz. :—

1	reported for 2 months; cancer making progress.
1	" " 2½ " " of omentum or colon.
1	" " 6 "
1	" " 8 "
1	" " uncertain.
1	alive at present, 6 months.
1	" " " 7 "
1	" " " 10 "

And therefore only 9 survived for about one year, or upwards, of whom

1	died in rather less than a year.
1	" " 14 months.
1	" " 21 "
1	" at the end of 3 years.
1	was alive nearly 3 years, in 1842.
1	is now alive 14 months.
2	are now alive about 2 years.
1	lived for 17 years.

Of 43 patients, whose sex is recorded, 22 were females and 21 males; and of the 21 early deaths, 11 were females and 10 males; so that neither the frequency of the diseases for which the operation is required, nor the result of the operations, is influenced by the sex. The age of 43 patients varied from 21 to 67 or 70.

It might reasonably be expected that the nature of the disease for which the artificial anus is made, would much affect the success of the operation. These diseases were :—

In 15 cases, stricture of rectum and sigmoid flexure of colon, believed to be not cancerous.

In 3 cases, stricture of ascending or transverse colon, also believed to be non-malignant.

In 1 case, twist of colon at upper part of ascending colon.

In 1 " adhesion of rectum to uterus from inflammation.

In 1 " strangulation of ileum by a band.

In 1 " fistulæ in ano.

In 1 " adhesion of ileum and rectum to cancerous uterus.

In 17 cases, cancer of rectum and sigmoid flexure of colon.

In 1 case, cancer of sigmoid flexure of colon of omentum.

In 1 " stricture of cæcum, with scirrhus of its coats from injury.

In 2 cases, unknown.

Of the 21 cases which did not recover from the operation, the assigned causes of death were:—

In 1 case, 2 lbs. of mercury given previously, dragging the ileum into the pelvis (cancer; died in 28 days).

In 1 case, unrelieved, the obstruction being above the opening (died in 12 hours).

In 1 case, fæcal evacuations incomplete (died in 8 days).

In 5 cases, exhausted by the disease (died in 12 hours; died in 12 hours; died in 36 hours, cancer; died in 9 days, cancer; died in 17 days, cancer).

In 4 cases, structural changes produced by the disease, viz., *a*, cæcum burst, and fæcus escaped into pelvis (died in 6 days).

b, Ulceration of bowel (died in 28 hours; died in 10 days, cancer).

c, Rupture of 6 inches of peritoneal cord from distension (died in 24 hours).

In 7 cases, peritonitis.

a, Old as well as recent (1 died in 16 days, cancer).

b, From the operation, 2 (1 died in 24 hours; 1 in 28 hours).

c, Begun before the operation (1 died in 5 hours; 1 died in 2 days; 1 died in 5 days).

d, From the cancerous ulcer (died in 14 days).

In 1 case, unknown, but cancerous (died in 2 days).

In 1 case, chiefly sloughing of sacrum (died in 36 days).

The deaths of 9 patients, who recovered from the operation, have been recorded; of which—

4 cases were cancerous (died in two months of phthisis; died in 3½ months of the disease and dropsy; died in 5 months of the disease; died in 1 year of the disease).

5 cases were stricture of colon or rectum not cancerous (died in 3 months; died in 6 months; died in 14 months; died in 21 months, all from the disease; 1 died in three years, probably of the disease).

There are now living, or were alive at last report, 13 cases, of which—

4 cases were cancerous (2 months, cancer making progress; 2½ months, in good health; 2 years, still alive; 3 years nearly, cancer not making much progress).

7 cases stricture of colon, or rectum, not cancerous (6 months, in good health; 6 months, apoplexy; 4 months, after operation; 7 months, in good health; 10 months, in good health; 1 year, in good health; 2 years; 17 years).

2 cases, disease unknown (8 months, in good health; time and date uncertain).

Table of operations through the peritoneum; 17 cases.

In cæcum, 3 cases (died in 12 hours; died in 24 hours; died in 28 days).

In small intestine, 2 cases (died in 12 hours; died within two days).

In right colon, 1 case (died in 24 hours).

In transverse colon, 1 case (died in 3½ months).

In left colon, 9 cases (died in 12 hours; died in 48 hours; died in 8 days; alive now, 7 months; lived above 6 months; died in 1 year; alive now, 13 months; alive above 4 years; lived 17 years).

In both right and left colon, left external to, and right through the peritoneum, 1 case (died in 28 hours).

Total, 10 died; 7 recovered.

Table of operations external to the peritoneum, 27 cases.

In right colon, 6 cases (died in 5 days; died in 10 days; alive 2½ months; died in three months; alive 8 months; died in 3 years).

In left colon, 20 cases (died in 5 hours; died in 12 hours; died in 36 hours; died in 6 days; died in 9 days; died in 14 days; died in 16 days; died in 17 days; died in 35 days; total, 9 in 5 weeks; died in 2 months; alive 2 months, cancer; died in 5 months; alive now, six months died in 6 months; alive now,

8 months; died in 14 months; died in 21 months; alive now, 2 years; alive nearly three years); (total 11, lived above 5 months).

Uncertain which side, 5; 1 case recovered.

Thus of both sides there died within 5 weeks, 11; recovered, 16=27.

Of right colon, died 2; recovered, 4=6.

Of left colon, died, 9; recovered, 11=20.

113 WEST 44TH STREET, July, 1873.

ART. III.—*Cases of Excision of the Supra- and Infra-orbital Branches of the Trifacial, of the Perineal, External Popliteal, and Posterior Tibial Nerves, etc. etc.* By THOMAS G. MORTON, M.D., Attending Surgeon of the Pennsylvania Hospital and Wills (Ophthalmic) Hospital, etc. etc., Philadelphia. (With a wood-cut.)

THE publication of the following cases has been deferred some considerable time, in order that the results of the operations which have been performed, whether beneficial or otherwise, might be more certainly determined. In almost all instances this is desirable, but more especially is this the case after operations for neuralgias and nerve affections generally.

In several of the cases detailed some years have elapsed since the nerves were excised, and the results in those instances may be considered as probably permanent. With two exceptions, the following operations were for the relief of intense long-standing neuralgias, the other cases of nerve excisions were undertaken for blepharo and blepharo-facial spasms unaccompanied by neuralgia.

The method of reaching the infra-orbital nerve varied in each of the three cases. In the first the antrum was trephined, and the nerve removed without disturbing the orbit, but long-continued and excessive suppuration followed with some slight necrosis; the ultimate result was, however, eminently satisfactory.

In the second case the nerve was reached on the floor of the orbit; a small triangular section of bone, between the foramen and the rim of the orbit was removed with the bone forceps, the base corresponding to the orbital edge; the diverging filaments of the nerve were then collected and the main trunk with these removed, about an inch and a half within the canal; in this case the wound was well in six weeks.

In the third case, after the usual incisions and the lower edge of the orbit was reached, the eye and the adjacent soft parts were pressed upward from the orbital floor, the nerve canal was punctured far back, and the very delicate bony covering was then broken up anteriorly the full extent.

This method is the simplest, the least severe operation, and insures the most rapid recovery.

Finding some difficulty in my first case in securing completely the main nerve trunk as it lies in the canal, I devised the blunt hook shown in the wood-cut, and in the succeeding cases found it very useful—after opening the roof of the nerve canal, the hook was carried under the cord, and with traction backward and forward the roof was broken away with ease, while the nerve was quickly separated and elevated before its division. After the excision of the infra-orbital branch of the fifth pair, total facial anæsthesia followed on the excised side in each instance. In the first two cases this has completely vanished with the return of normal sensibility, showing conclusively that permanent paralysis of sensation need not be apprehended after these nerve excisions.

The line bounding the space of skin anæsthesia could be traced in each case along the median line from the root of the nose, downward to and involving half of the upper lip, thence outward from the angle of the mouth about an inch and a half, then directly upward to the external angular process of the orbit.

After the excision of the supra-orbital nerve in the case of blepharospasm there was anæsthesia for five inches above on the nasal, and three inches upward on the temporal side; sensation at the same time existed along the extreme edge of the upper eyelid, and also on its mucous surface. In this case also the natural condition of the skin, now two years since the excision, is returning, the numbness which succeeded the anæsthesia is gradually disappearing.

The results of these operations have been eminently encouraging and satisfactory. In the cases of neuralgia of the face it was not thought necessary to extend the operation, and remove the ganglion of Meckel, for the disease of the nerve seemed located in the infra-orbital, at and about its emergence on the face, while the results in these two cases, after some years, has supported this view; it is true that any trivial excitation, mental or otherwise, was sufficient in these cases to induce an attack of pain, yet repeated examination in the absence of the paroxysms showed that an exquisite degree of sensitiveness was continually present at the place of divergence of the nerve on the face.

It is worthy of note perhaps that the nerves on the left side of the face appear to have been more frequently the subject of excision for neuralgia than those of the right side.

The first case of excision of the infra-orbital nerve was for neuralgia of the most excruciating character, and which had existed for more than fifteen years; there was entire relief for a long time; in fact there has never been any pain at the original seat of suffering. The discomfort the patient now has, he describes, as "a consciousness of suffering or a tendency to it," while this is confined entirely to the lip and angle of the



mouth; the patient has been vastly benefited and so remains after a period of more than three years since the excision; possibly with the removal of the ganglion of Meckel the relief might have been entire, although in a similar case of neuralgia reported by Mussey,¹ where Carnochan's operation was performed, paroxysms of pain in the temple were experienced after the operation.

The second was a most distressing case of terrible neuralgia which had existed for upward of thirty years; more than two years and a half has elapsed since the nerve excision, and the patient continues perfectly well, and has never had the slightest return of the old malady.

The third case of excision of the infra-orbital was for blepharo-facial spasms without neuralgia, which had lasted for twenty years with a sensitive infra-orbital nerve; the patient was in a miserable condition, and was desirous to undergo any operation which held out the slightest chance for any alleviation. There has been great improvement already, with a daily lessening of the contractions of the muscles.

In the case of blepharospasm, eighteen months of constant use of the eyes (the patient being an active practical farmer) since the supra-orbital nerves were excised, has thoroughly tested the value of the operation.

The excision of the perineal nerve represents a very unusual if not unique operation, while the continued freedom from all neuralgia gives promise of continued success.

In the case of stump-neuralgia, after a Pirogoff amputation, a useful limb has been saved, upon which the patient can sustain his entire weight without any artificial appliance, by the excision, first, of the posterior tibial, and subsequently of the external popliteal nerve.

CASE I. Excision of the trunk of the infra-orbital branch of the fifth pair of nerves, for intense neuralgia of fifteen years' duration.—E. L., æt. 60, residing in Maine, was requested to place himself under my care, by Dr. Isaac Ray, now of this city, early in the month of April, 1870, for a very severe neuralgia of the left side of his face, for the relief of which all the usual remedies had been tried, but without any beneficial result.

Mr. E. L. had just returned from Florida, where he had been spending the winter, hoping that the warm climate might prove of service. He was enfeebled, had a bronchial catarrh, pallid countenance, and a miserable digestion. Opium and alcoholic stimulants were constantly used to insure him a certain measure of relief from the atrocious pain he was so frequently called upon to endure.

The neuralgia was principally located on the branches of the infra-orbital, and the least pressure at the place of this nerve's emergence on the face would bring about the most exquisite suffering.

Excision of the trunk of this nerve was for the first time proposed, and the operation performed early in May, 1870. The ordinary external incisions were made, the antrum was trephined, and fully an inch of the

¹ Am. Journ. Med. Sci., Oct. 1869, p. 594.

nerve removed from a point as far back as possible. Total anæsthesia of the side of the face followed, with absolute relief from the neuralgia.

Considerable suppuration ensued; the patient was much reduced by his temporary confinement; the bronchial catarrh assumed a very severe form, and a large pulmonary abscess formed, and the symptoms became alarming. With the excessive expectoration great wasting occurred; finally he improved, and remaining quite free from all neuralgia, left for his home in the East in the month of July following.

On the 16th of March, 1871, Mr. E. L.'s brother wrote me as follows:—

"After the operation the relief was *entire*, it so remained for two or three months; after that a slight uneasiness began to come on, but no *very acute* pain at any time, though he is seldom without some consciousness of suffering or such a tendency to it, that a careless motion, or any perplexity of the mind would make the presence of the enemy felt; he still holds his own, and more; at least so far as his years and so long and wretched a siege on his strongholds of life would permit. Since the operation he has had *no* pain at the original seat; what he has now is mainly at the lips and around the lower part of the face. He is confident, that, if the operation had been performed earlier and when he was not so much broken down, the cure would have been complete. He is equally confident that without the operation he would not now be living to thank you for the measure of relief afforded."

Jan. 28, 1873. "My brother would have me say that there has been no marked change in his condition that he is conscious of since he wrote you two years ago.

"You ask about the sensitiveness of the skin at present; whether paralyzed or not.

"There is no loss of sensibility now as the *result of operation*. From the first acute attack years ago, the skin has never been in exactly a healthy condition, and the "numbness" of which he has so often spoken is hardly in the skin; indeed the term itself is used for want of any other to describe an indescribable sensation.

"My brother regrets that he cannot well answer your letter with his own hand, writing is one of the things which he is least able to do with safety; and he has always found it best not to provoke a contest with his life's enemy."

CASE II. *Excision of the trunk of the infra-orbital branch of the fifth pair of nerves, for neuralgia of thirty years' duration.*—Mrs. S. S., æt. 61; native of England, was first attacked with neuralgia in 1834; the pain then was looked upon as an ordinary facial neuralgia of severe type, which continued off and on for three months. She experienced attacks during the next two years; was married in 1836, and in this year had some eight attacks of intense pain, which, however, yielded to mild opiates. Yearly attacks were experienced until 1840, when she had a terrific spell; during 1841 and '42 she was confined to bed for eighteen months, and but little benefit was experienced from powerful opiates. In the succeeding year the paroxysms of pain were so fearful that delirium came on, during which the patient would attempt the mutilation of her person. In 1843 she was brought across the Atlantic, and with the use of lactucarium and blue mass the attacks were lessened. In 1844 she removed to the State of Delaware, when the paroxysms again assumed a more violent type, and stimulants in large quantities were used, the amount being gradually increased, as it was found by this means the duration of the spells were lessened. By advice of her physician, in '53 the patient went to England, and some benefit was experienced from the voyage; during a period of six months there was comparatively a freedom from pain. In '54 she was again in bed for six months, and about this time an eminent

physician of this city was consulted, and by his direction all the teeth of the upper jaw were extracted without any good result. The neuralgia continuing, another voyage to England was made in '64, with some benefit, which lasted for several months. From '66 to the time the patient came under my care, there was almost a continuous condition of intense unremitting suffering; it was the same history over again of all these terrible neuralgic cases; for eighteen months prior to my seeing her, the average amount of laudanum taken every week was four ounces, while an ounce each day was no unusual quantity.

January 16, 1871. Mrs. S. was brought to my office, and when I first saw her, it was during an attack of pain, apparently excruciating. I at once used half a grain of morphia under the skin, and no relief appearing the same quantity was again injected in about twenty minutes. Several fearful spells followed in quick succession during the hour she remained under observation.

The pain originated on the left side of the face, apparently about the infra-orbital foramen, and was always located at this point, and thence radiated over the face and head. The nerve at this place was exquisitely sensitive, the least pressure inducing an attack. Either eating, drinking, talking, or swallowing was quite sufficient to provoke a paroxysm. Vision in the left eye was only $\frac{1}{16}$, and not capable of any improvement by glasses. In the right eye there was acquired hypermetropia = $\frac{1}{24}$, with a presbyopia = $\frac{1}{10}$.

Excision of the trunk of the infra-orbital nerve was recommended, and strangely enough had never been suggested or proposed during her thirty years of torture, and so eager was the patient for relief that the operation was at her urgent request performed the following day. After the infra-orbital foramen was exposed, the cutting forceps were applied, and that portion of the edge of the orbit above the foramen was removed, until the canal containing the nerve trunk was reached; passing the hook, p. 393, under the diverging filaments, the instrument was pressed backwards, and the roof of the nerve canal was broken up; the nerve was then excised, about an inch and a quarter being removed. Considerable suppuration ensued, and a small fragment of bone was removed. In six weeks the wound was well. The relief from pain from that time has been entire. There was total anæsthesia of the left side of the face.

August 12, 1873. The patient since the operation, now more than two and a half years, has been ever since *absolutely* free from *all* pain. There is also a complete restoration of sensation on the left side where the nerve was excised. About one year after the operation a feeling of numbness took the place of anæsthesia, this in turn was followed by a very peculiar tingling, more apparent when the skin was rubbed; following this an itching, increased by friction, preceded the return of normal sensitiveness, which latter condition has been observed for about six months. Now and then a drop or so of a clear watery secretion escapes from the left nostril, and is not noticed until it reaches the lip, and occasionally a tear may fall upon the cheek before being noticed as collecting about the eye. This is all the change the patient experiences, as compared with the other side of the face, as a result of the operation.

Vision, which was very much diminished, has since the operation been entirely restored; with a $+\frac{1}{24}$ for distance which overcomes the hypermetropia, and a $+\frac{1}{9}$ for reading, the patient has normal vision with both eyes.

CASE III. *Blepharo-facial spasm of more than twenty years' duration; subcutaneous division of the supra-orbital, and excision of the infra-orbital nerves.*—During the latter part of May of this year, I was consulted by Mrs. I. S., aged 56, of Philadelphia, on account of an almost continuous spasmodic contraction or jerking of all the muscles of the right side of the brow, face, and neck; the intervals of rest being only momentary. The disease first showed itself more than twenty years ago, coming on with a very trifling twitching of the muscles of the cheek; gradually this increased, and in the course of a few years the contractions were so violent that the eyelid was kept firmly closed, the angle of the mouth tensely pulled backward, and the skin of the neck drawn downward with marked elevation. This condition during the past few years has been gradually assuming a more violent form, giving great distress, but never accompanied by the least pain. Years ago all the teeth in the upper jaw were removed, from the supposition that some disease perhaps was lurking at the roots of the teeth unnoticed. This, however, did not give the least relief, and no treatment of any description has ever produced any alleviation of the malady. Her husband informed me that there was no cessation of the jerking even during sleep, but that after a good night's rest the contractions were not so excessive for an hour or so after rising.

Firm pressure on the infra-orbital nerve produced but trifling control of the spasmodic twitchings, but no effect was evidenced by any pressure made on the supra-orbital or facial nerves; the patient's general health was and has been always excellent.

Drs. Mitchell and Hunt saw this case with me, and it was concluded that the chances for relief from an excision of the supra- and infra-orbital nerves were not at all encouraging, in fact discouraging, not only from the great length of time the disease had existed, the general involvement of the muscles of the face and neck, but also from the fact that the spasms could not be *controlled* by pressure at any point, only a slight impression being produced by the firmest pressure below the orbit, while this gave considerable pain. The case was one in which an operation (experimental it must be) was deemed justifiable, but where even a measure of relief could not be assured. The patient was very anxious for some attempt to be made, and her husband, who was a man of intelligence and wealth, was so impressed with the excellent result in the case (IV.) of blepharospasm, having expressly visited this patient at Huntingdon, Pa., that he determined to have an operation in his wife's case performed.

June 10, 1873. Assisted by Drs. Mitchell, Hunt, and others, I made the ordinary incisions for the removal of the infra-orbital nerve; after reaching the lower rim of the orbit, the soft parts were dissected upward and the floor of the cavity denuded for some distance posteriorly, the roof of the nerve canal was punctured rather more than an inch behind the orbital edge; the blunt hook was then passed under the nerve, and drawing the instrument forward the remaining portion of the roof of the canal was broken away, the nerve was divided as far back as possible, and at least an inch was removed; the supra-orbital was then divided subcutaneously in two places. Before the ether had been removed, while the sutures were being introduced, the twitching of the muscles appeared, but were apparently less severe and not so persistent.

Paralysis of sensation resulted to the same extent as in the other cases of infra-orbital nerve excisions; on the brow and scalp there was simply marked numbness.

August 7. The twitchings are still present, but there is a marked improvement; the spasms are less protracted, and the intervals of rest much longer and a daily subsidence is noticed; sometimes there will be a cessation of the twitchings for more than an hour at a time.

CASE IV. *Severe Blepharospasm of twelve years' duration; excision of both supra-orbital nerves.*—D. H., of Huntingdon, Pa., was advised by his physician, Dr. A. B. Brumbaugh, to consult me—March, 1872—about a severe nervous affection from which he had long suffered. The patient noticed about twelve or thirteen years ago a peculiar nervous twitching of his eyelids and the adjacent muscles, which gradually increased and finally became constant. The spasms of the orbicularis became so excessive and frequent that he was quite unable to attend to any business, and for some months past had been confined to the house, and when attempting to walk around or use his eyes, the lids would be so firmly closed that he had to be led about. No pain had been experienced during the twelve or thirteen years of this distressing malady. The patient had observed that firm pressure on the middle of the eyebrows or on the temples allowed him temporary relief, and he had been constantly in the habit of resorting to this method to secure momentary vision or cessation of the spasms.

The patient was a farmer, quite robust, and in every respect of sound general health; he was about fifty-eight years of age, of a rather spare frame, and never remembered having been sick. The spasms which constantly kept his eyelids firmly closed have always been unattended with the slightest pain; the orbicularis oculi, and the corrugator muscles, as well as those of the face and neck, participated; there was a violent jerking of the head, choreic in character. The marked quivering of the muscles about the mouth, face, and neck had within the last years only been observed. Firm pressure on the supra-orbital nerves controlled the spasms, while pressure on the temple or the infra-orbital nerves materially lessened, but did not control, the twitching. Light seemed to be the exciting cause, for in darkness the muscles relaxed and the patient's rest was undisturbed. With great difficulty I examined his eyes and found normal acuity of vision with a presbyopia = $\frac{1}{16}$; there was no lesion observed with the ophthalmoscope.

A solution of atropia gr. iij to the ʒj, was used in each eye morning and evening. Veratria ointment was applied over the brows, and counter-irritation behind the ears, and the artificial leech to the temples.

March 9. Wet cups were applied to the nape of the neck and temple, and room kept darkened, and 15 grains of extract conium, with 5 grains of Vallet's mass, given three times a day with a pint of porter.

13th. Spasms in no way lessened; can scarcely take his meals from the twitching of the face and head, and after consultation with Drs. Mitchell, Hunt, and others, I subcutaneously divided (March 14) the supra-orbital nerve on the right side, and removed more than half an inch of the nerve on the left side.

16th. Has had no spasms of the muscles around the left eye, but the twitching still exists on the right side; bandages firmly applied.

20th. Eyes exposed; total anæsthesia over the brow of the left side; on the right, sensation to some extent exists all over the supra-orbital region, which shows that the subcutaneous operation has not been complete, or that the nerve has re-united.

Since relief was not entire on the 27th, I excised the right nerve in same manner as the excision on the left side, removing rather more than half an inch. After this the cure was complete, the patient being able to bear any amount of light and having, at the same time, perfect control of the lids; on the 4th of April he left the city perfectly well.

Prof. Leidy examined the tissues and reported "of the cords removed, one is a portion of an artery, another a portion of a vein, and two others portions of nerves, and nothing observable of peculiar character."

August, 1873. Mr. H. is in perfect health, and has the entire use of his eyes. In answer to inquiries regarding the condition of the skin of the brows, Dr. Brumbaugh replied as follows:—

"There is still considerable *numbness* of the brow and forehead, extending on the right side from a point on the brow about a quarter of an inch inside the outer edge of the orbit, a little backward and upward (rounding off toward the median line), until it reaches a point about one and a half inch above the frontal prominence, extending almost directly across the head by a similar line on the left side reaching a point about a quarter of an inch outside the outer edge of the orbit. It extends on the nose to a point directly on a line with the inner 'corners of the eyes.' This feeling of *numbness*," he states, "has been gradually passing away."

CASE V. *Vaginal neuralgia of twelve years' duration; excision of the perineal nerve.*—Mrs. S. F., now a resident of this city, 42 years of age, was confined at San Francisco on June 22, 1860; labour was somewhat tedious, but the child was not above average size. The only drawback to a rapid convalescence was a pain described as vaginal, at times quite severe, which was located on the right side of the urethral opening and involved the lesser labia; all treatment during the past years had failed to give any relief. The patient's general health was uniformly good, and her menstrual functions appeared with regularity. The least pressure on the parts, whether from sitting or otherwise, produced an increase of her suffering, and all marital relations were necessarily suspended.

I saw this lady in consultation with Dr. De Young, and found great vaginal tenderness anteriorly on the right side, and some displacement of the uterus, for which pessaries had been used but discontinued from the pain induced by pressure. There had been a laceration of the perineum, and thinking that the prolapsus incident to this might be the cause of the pain, the perineum was freshened and closed up with three superficial and three deep sutures.

No abatement of the neuralgia followed this operation; a seton was then introduced above the groin, and although free suppuration was excited, the pain was in nowise lessened.

October, 1872. On examining again the vaginal walls, and especially the descending ramus of the pubes, I found that the deeper the pressure, the greater the pain, and then for the first time a firm cord was discovered, which could be rolled about under the finger, which was fully as large as, and resembled very much, a spermatic cord; this was painful in the extreme to the touch, and was recognized as the perineal nerve; several examinations were followed by the same results, and since the seat of pain was evidently in this nerve, its excision was advised. After full etherization, a deep vertical incision brought into view the cord, which was removed to the extent of an inch; it proved to be a dense hypertrophied nerve, otherwise not altered in structure; the wound closed up well in a few days.

All distress and pain vanished from the moment of operation.

January 26, 1873. Total anæsthesia has followed at and about the place of operation, extending upon the labial tissues, with a numbness of the adjacent groin surfaces; there has not been any return of pain.

August, 1873. Continues well.

CASE VI. *Neuralgia of stump following a Pirogoff amputation; excision of posterior tibial and external popliteal nerves.*—J. W., a labourer, aged 52, was admitted into the Pennsylvania Hospital on the 19th of August, 1870, with a compound fracture of the right foot; amputation by the Pirogoff method was performed immediately on his admission—an excellent recovery followed, without any undue tension of the cicatrix, and patient was discharged with one or two very small fistulous tracts which closed up eight weeks after his leaving the hospital.

Previous, however, to his discharge, neuralgia in the stump appeared, the pain at times being quite severe; the patient was able to walk and even to bear his entire weight on the stump, yet each step was accompanied by pain, referred principally to the great toe, with a sensation of the toe's being puckered up or tied in a knot; pain was also located in the little toe and slightly in each of the others.

This neuralgic condition prevented the man from engaging in any work, and in the month of August, 1871, he sought admission again for the purpose of a re-amputation. The tissues around the cicatrix in front of ankle were found very tender, the heel being in a normal condition, and apparently no bulbous condition of the nerves existed, the stump was an exceedingly perfect one, and I declined to amputate the leg, but consented to excise the posterior tibial nerve. An incision was made just above the ankle and an inch of the nerve was removed, which was found much enlarged and thickened. This materially relieved the pain in the stump, but not entirely; the cicatrix remained very sensitive. After this the tissues covering the cicatrix were divided down to the bone, with no relief.

In December following the patient re-entered the hospital, and I excised rather more than an inch of the external popliteal nerve on the edge of the biceps tendon. A rapid recovery followed this last operation, without an unpleasant symptom, and the patient was discharged quite well; he had an excellent useful stump, long enough to walk without any artificial appliance, and was able to bear, without the least discomfort, his entire weight upon it.

Since his discharge he has been free from all pain.

There is total anæsthesia of the stump and partial of the limb.

CASE VII. *Neuralgia in stump; bulbous extremities of the nerves; re-amputation.*—J. W. C., aged 24, was admitted into the Pennsylvania Hospital October 12, 1865, for intense neuralgic pains in his stump.

His right foot was shattered by a shell at the siege of Richmond, September 29, 1864, and amputation of the leg was performed on the battlefield, a few hours after the injury. On the 21st day the stump, which was doing well, began to slough, and considerable loss of skin resulted; supuration continued for several months, and during this period pain became a prominent symptom with marked twitching of the muscles. The flap operation had been performed; the cicatrix was irregular, with a general transverse direction, and the integument was firmly attached to the ends of the bones.

Small painful nodules were found at the extremity of the stump on either side, under pressure exquisitely sensitive.

October 14. The skin was dissected up, the patient being under the influence of nitrous oxide gas, lateral oval flaps were made, and a circular division of the muscles. The anterior tibial and peroneal nerves after division were well drawn down and severed high in the sheath.

November 25. Was discharged with an excellent stump and with no return of the neuralgia.

Report of Dr. MORRIS LONGSTRETH, who examined the portions of nerves removed.

The specimen shows the integument covering the end of the stump contracted in a puckered cicatrix, and is marked with deep furrows. The integument is tightly adherent to the bones, and its connection with the muscles consists of firm bands of connective tissue. The tibia and fibula are evenly rounded, with their extremities, perhaps, unduly enlarged. The nerve trunks, viz., the posterior tibial and both branches of the peroneal, are all enlarged, and terminate in bulbous extremities which are adherent to the cicatrix by dense fibrous tissue.

Microscopic examination of the enlarged portion of the nerves showed them to be composed mainly of fibrous tissue. a few nerve fibrils only passing through them. For a short distance above the bulbous extremities the fibrous tissue in the nerve trunk was much increased.

The following are the measurements of the nerve trunks in their healthy portions and of their bulbous extremities.

The branches of the external popliteal or peroneal nerve.

I. Anterior tibial branch:			
Diameter of the healthy portion	.	.	$\frac{1}{8}$ inch.
" " bulbous enlargement	.	.	$\frac{1}{4}$ to $\frac{1}{3}$ inch.
Length " "	.	.	$\frac{3}{8}$ inch.
II. Musculo cutaneous branch:			
Diameter of the healthy portion	.	.	$\frac{1}{8}$ to $\frac{1}{6}$ inch.
" " bulbous enlargement	.	.	$\frac{1}{3}$ inch.
Length " "	.	.	nearly 1 inch.
III. Posterior tibial nerve:			
Diameter of the healthy portion	.	.	$\frac{1}{4}$ inch.
" " bulbous enlargement	.	.	$\frac{1}{2}$ inch.
Length " "	.	.	$\frac{3}{4}$ inch.

PHILADELPHIA, August, 1873.

ART. IV.—*On the Difficulties attending the Diagnosis of Aneurism, being a Contribution to Surgical Diagnosis and to Medical Jurisprudence.*

By STEPHEN SMITH, M.D., Surgeon to Bellevue Hospital, New York.

IN a former number of this Journal (April, 1873) the difficulties of diagnosis of aneurism from abscess were considered and illustrated with cases. The present article is a continuation of the same general subject.

I. ANEURISM AND NON-MALIGNANT TUMOURS.—In its progressive changes an aneurism may assume all the apparent conditions of the different forms of tumour. It may be very soft and fluctuating, and be mistaken for a cyst, even when pulsation and a bruit are present; or a cyst lying over an artery may fluctuate, pulsate, and have a bruit, and be diagnosed

an aneurism and treated accordingly. Again, an aneurism may become firm and resemble a fibrous tumour, or it may have points of fluctuation like a fibro-cystic growth. The liability in diagnosis to error under these various circumstances and conditions is very great, as the records of surgery prove. The course which the surgeon should take in such cases is very important, and his position is often embarrassing. In the midst of doubt and danger he is liable to act imprudently, perhaps rashly, and the mistakes which he makes may be of the most serious nature. Under these circumstances he cannot do better than to follow the advice of one of the most eminent surgeons of the past. Boyer says:—

“In many cases it is impossible to pronounce in a positive manner, if a tumour placed over a large artery be an aneurism, or a tumour of another nature. In this doubtful case we ought to conduct ourselves as if the tumour were really an aneurism. In conforming to this rule it will no doubt happen that sometimes we shall not touch tumours the opening of which is proper and safe. But the inconveniences that may result from this, are not comparable with the danger to which the patient would be exposed by opening an aneurism instead of a tumour of another nature.”

1. *Aneurism mistaken for Cystic Tumour.*—If an aneurism should have very thin walls, and should not have the ordinary signs, as pulsation, bruit, expansion, it would almost inevitably be mistaken for a cystic tumour. Nor could the error be corrected except by puncture. Such cases must necessarily be extremely rare, for it is the unconsolidated aneurism which gives pulsation as its constant and most reliable symptom. But experience proves that an aneurism with thin walls may exist without pulsation, and so closely resemble an encysted tumour as to lead to an operation for its extirpation. Though the following case was “rare and remarkable,” still it deserves insertion, if for no other purpose than to demonstrate the fact that all symptoms are liable to deceive the surgeon in the diagnosis of aneurism. It was reported in the *Am. Journ. Med. Sci.* (vol. iv. p. 237, May, 1829).

A boy received a blow on the left temple; a tumour was developed which was supposed to be encysted, and extirpation was attempted. The excision was immediately followed by profuse hemorrhage, which was arrested by compression; the patient had convulsions, which soon terminated in death. The extirpated tumour was an aneurismal sac communicating with the middle meningeal artery, by an opening situated between the squamous border of the temporal and the corresponding portion of the parietal bone. The middle meningeal artery was of the size of a finger fifteen lines lower than the opening. A depression in the brain under the aneurismal dilatation contained one and a half ounces of bright blood.

2. *Cystic Tumour mistaken for Aneurism.*—If a cystic tumour should happen to be placed over an artery, it may with nicest accuracy respond to most of the tests of an aneurism. It may pulsate freely, and if it partially envelops the artery, the pulsation may be expansive. It may have a bruit sufficiently well marked to be deceptive, and it may to a certain extent recede, but not collapse when pulsation is arrested. In cases of this kind a correct diagnosis seems to be impossible without a resort to punc-

ture. And if it were a sanguineous cyst, even this test might fail to make the diagnosis positive.

Prof. Syme (*Edin. Monthly Journ.*) reported the following instructive case of this kind in which all the difficulties of diagnosis are graphically set forth :—

“A young man had a swelling in his neck, seated on the right side, occupying the upper triangular space, of an oval form, quite circumscribed, and obviously consisted of a bag containing fluid; there was distinct pulsation characteristic of aneurism; patient stated that the swelling commenced nine months ago, and had progressively enlarged without any apparent cause; when he worked hard or walked fast, it increased in size and beat strongly; varied the process of examination by placing him in different positions—by trying the effects of pressure on the artery and the tumour—and by listening to the sounds of the tumour. There was no distinct aneurismal ‘bruit,’ but a very strong, loud pulsation, that implied the action of the heart upon an extensive surface. After much reflection advised an operation; tied the carotid below the crossing of the omohyoideus; tumour immediately diminished in bulk, which was remarked even by the patient; went on well for five days, when hemorrhage took place from the wound, recurring from time to time, and finally proving fatal. On inspection a tumour was found extending from the ear to the extremity of the omohyoideus, and completely occupying the upper triangle of the neck. At the lower part it seemed to terminate in the sheath of the vessels, which looked like a prolongation of it downwards, but was found to be merely enveloped by the bag, which was dissected out from the coats of the vessels to which it had intimately adhered. The cyst was found to contain a fluid like thin gruel, and it possessed a tough consistence. At the posterior part, viewed internally, it displayed a sacculated or honey-comb-looking structure.”

It is noticeable that in this case all the symptoms of aneurism were present except a bruit. The absence of this symptom was in reality the most important fact elicited by the examination, for cystic tumours overlying arteries are not in general sufficiently compressible to so interrupt the flow of blood in the artery as to give a distinct, or in any sense a characteristic bruit. The “strong loud pulsation that implied the action of the heart upon an extensive surface,” is precisely the auscultatory sign of a cystic tumour lying in immediate contact with the artery. Mr. Syme, on the contrary, was influenced more by the expansive pulsation of the tumour, a symptom which is in general so characteristic of aneurism. The following explanatory remarks are of interest, as they prove the doubt and uncertainty which the most eminent surgeons experience in the diagnosis of aneurism :—

“I have had extensive opportunities of observing tumours of an aneurismal kind, and it was impossible for me to bestow more care in any instance than in the case just related. But the character which I have hitherto regarded as the most certain indication of aneurism may be presented by a peculiar state of things of an entirely different kind. I allude to the general expansive pulsation, especially when felt in a lateral direction. This was most distinctly recognized not only by myself but by several gentlemen well practised in the diagnosis of aneurisms, who agreed with me in the belief that an aneurism existed. Having come to this conclusion, and being requested by the patient to do what seemed proper, I had no course but to tie the artery. The low situation to which the ligature was restricted, the consequent proximity of the innominate, and the intimate adhesion of parts, no doubt led to the hemorrhage.”

A case not unlike the preceding was recently treated in Bellevue Hospital. The tumour was situated in the inferior and external triangle of the neck, had distinct pulsation, but no well-defined aneurismal bruit; the diffused impulse was noticed. A consultation of surgeons decided in favour of aneurism, and the operation of ligature of the subclavian was advised. A ligature was accordingly placed around the artery, but before it was tied the cystic nature of the tumour was discovered by puncture.

Breschet (*GUTHRIE, Inj. and Dis. of Art.*) reported a case of what was regarded as an encysted tumour, which communicated with the aorta.

The subject was a child, æt. 10 years, who had several abscesses form after scarlet fever. A tumour formed on the anterior superior part of the thorax, extending to the left side of the neck. A student of medicine, believing this tumour to be an abscess, punctured it, when a jet of blood was thrown out, and it continued to flow until the tumour was emptied. A stimulating injection was used and compression resorted to by compress and bandage. On the next day the tumour refilled and pulsated; on the second day she died. On examination the sac was found to consist of two parts, one external and the other internal, the communication being through a carious hole in the bone; the internal cavity communicated by a very small opening with the interior of the aorta on its anterior face, and near the carcinomata.

The existence of an encysted tumour in this case was very doubtful; it is much more probable that there was suppuration, and that the aorta was opened by the process of ulceration consequent upon pressure.

3. *Fibro-Cystic Tumour mistaken for Aneurism.*—A tumour of a solid character, but interspersed with cysts, as in the fibro-cystic variety, may be so related to an artery, as to give the most positive evidence of being an aneurism. In these cases expansive pulsation may be present, and also an imperfect aneurismal thrill. Such tumours, in contact with an artery, resemble in many important particulars the cystic variety. They admit often of marked expansion, and being more directly compressible upon the artery, they give a more definite bruit. The following case (*Lond. Med. Times*) shows how difficult the problem of diagnosis may be to solve with the data given.

A soldier was admitted to the hospital with a swelling in the left ham as large as a goose's egg, partly compact, partly fluctuating, and distinctly pulsating on moderate pressure; came on suddenly, three weeks previously, while walking; diagnosis aneurism; compression was tried, and afterwards the femoral artery was tied. The tumour, however, continued to grow, and the patient finally died of pulmonary trouble. On examination the tumour was found to be fifteen inches long, and twenty-four in circumference, pear-shaped, lobed, and firmly adhering to the periosteum of the tibia and femur. On the surface were five sacculi containing five or six ounces of sero-sanguinolent fluid, and apparently formed by the separation of the two layers, of which a tough fibrous membrane enveloping the whole tumour was composed. The tumour itself consisted in part of a dry fibrous reticulated tissue divided by partitions of loose tissue into lobes, and separated into two chief portions by a plate of bone; and in part of a softer substance, easily broken, rose-coloured, interspersed with fibrous tissue, and containing many cells filled with serous fluid. The femur and tibia were healthy. The artery ran over the tumour, and between two of the sacs of fluid on its surface, and through these its pulsations had been so communicated as to give the sensation of the whole tumour pulsating.

It does not appear in this case that auscultation was resorted to ; but there can be no doubt that a bruit might have been well marked. The proper test of such a tumour, as in the cystic variety, would be cautious exploration. In no other way could its nature have been satisfactorily determined. And yet it must be noticed that even a puncture might have misled the surgeon, for in the middle portion, where doubtless pulsation was most distinct, the exploring needle might have penetrated the artery, and possibly have obtained a jet of blood, which would have confirmed the diagnosis of aneurism. The exploration, to be of value in this instance, must be in the lateral parts of the tumour. And this rule in regard to the selection of the point of exploration of all tumours suspected to be aneurismal is important, as we thereby avoid the artery.

4. *Vascular Tumour mistaken for Aneurism.*—Vascular tumours, especially the arterial variety, often simulate aneurisms very accurately. They may pulsate expansively and have a bruit which though not characteristic of the aneurismal thrill, is yet liable to be mistaken for that of aneurism ; they cease to pulsate when firm pressure is made on the proximal portion of the artery, partially collapse, and again refill when the pressure is removed ; they cannot be raised from the artery any more than an aneurism ; if punctured, they give issue to arterial blood. Though an erectile tumour is generally more flat and less circumscribed than an aneurismal tumour, yet this is not always the case. The following case, reported by Dr. Kerr (*Ed. Med. and Surg. Journ.*, vol. 61), is in point:—

Mrs. F., 67 years of age, had on the right side of her neck a large circumscribed tumour, pulsating strongly, and extending from the angle of the jaw to the sternum and clavicle. At the lower part of the swelling mortification had made considerable progress, and arterial blood oozed occasionally from the sloughing portion. The sloughing process had penetrated nearly an inch in depth, and this circumstance, together with the firmness of the tumour, led to the opinion that it contained a large quantity of coagula. The tumour had very much the appearance of an aortic aneurism, which it was supposed to be, a careful examination not being made for fear of a fatal hemorrhage taking place. Under treatment the bleeding ceased ; the dead parts separated, and the sore nearly cicatrized ; tumour temporarily diminished in size. The danger of immediate hemorrhage being past, a careful examination was made. The trunk of the carotid was traced around the outer and posterior part of the tumour, being greatly displaced by it. Pressure on the artery below its bifurcation arrested the pulsation in the tumour. The swelling had begun twenty years previous, when it appeared about the size of a pea, near the angle of the jaw after a severe fit of coughing, remaining stationary for about ten years, when it began to increase, in consequence of the patient having made such exertions as were calculated to excite the action of the vascular system, until it finally reached its present magnitude. All these facts, together with the characteristics of the tumour, left little doubt of the case being one of aneurism of the carotid commencing at the usual place or at the origin of one of the branches, this being the opinion entertained by all those who saw the case. The *bruit de soufflet* was distinctly perceived with the stethoscope, and the thrilling sensation so characteristic of aneurism was strong on the cardiac side. The swelling again began to increase, giving rise to distress from pressure on adjoining parts, and the common carotid was ligated, the wound cicatrizing rapidly ; tumour diminished greatly in size, and the pulsation entirely disappeared. Nine months after the operation the patient died of pneumonia, and on

examination it was discovered that the artery was perfectly sound. The tumour seemed to be made up of cellular tissue and vessels loaded with blood, a large branch of the carotid leading into it and from which it seemed to derive its whole supply.

5. *Aneurism mistaken for Solid Tumour.*—An aneurism may become so far consolidated as to lose its characteristic features. This may occur while the tumour is small, or after it has attained to a considerable size. Pulsation may continue, but it has very nearly the character of the pulsation of a tumour situated upon an artery. The early history of the tumour is of great importance, and, if accurately given, may guide the surgeon to a correct conclusion. If, however, the early history is obscure, or unreliable, and the surgeon is compelled to rely upon his examination of the tumour itself, the diagnosis is often involved in great doubt and uncertainty.

In the following case reported by Mr. Lawrence, pulsation was not present, nor did the patient recollect that it was ever noticeable. Auscultation was not practised, and if it had been there is much doubt as to the existence of a characteristic bruit. (*Med. Chir. Trans.*, vol. 8.)

A middle-aged man was received into Saint Bartholomew's Hospital, with a large tumour filling up the whole ham, and extending on both sides of the femur towards the front of the limb. It had begun behind; had existed for five months; had grown latterly with great rapidity, and manifestly increased during a few days; had a firm fleshy feel, being a little softer at one of its anterior protuberances than in other parts; caused great pain, though it was not tender on being handled; had caused considerable œdema of the leg and foot, and had rendered the limb completely useless. The surgeons of the hospital in consultation regarded it as a large and rapidly increasing fleshy tumour, and decided that amputation of the limb was the only remedy that could be proposed. This was performed high up, having first plunged an abscess lancet into the softest part of the tumour to the whole depth of the blade, without giving issue to any fluid.

The examination of the amputated limb discovered that this tumour was a popliteal aneurism, containing an immense mass of firm bloody coagulum; not of that light-brown laminated kind, which lines old aneurismal sacs, nor of the loose and soft texture that belongs to recently clotted blood. Hence, although the sac had been freely penetrated by the abscess lancet, no part of its contents escaped.

6. *Fibrous Tumour mistaken for Aneurism.*—A fibrous tumour forming over an artery may receive pulsation and have a bruit, but neither are characteristic of well-developed aneurism. But a consolidated aneurism will sometimes give very nearly the symptoms of a solid tumour, and cannot very easily be distinguished from it. The history is then the most important feature of the case, and if that is unreliable the diagnosis must be involved in great doubt. If a fibrous tumour is small it may be raised from the artery, and thus its nature may be determined, but if larger, this test is of no value. The following case presents many of the more important features of a doubtful case. (*Lond. Lancet*, Jan. 4, 1873.)

A woman, æt. 64, accustomed to carry a heavy basket which constantly bruised the thighs, seven months since noticed a swelling size of hen's egg on inner side of left thigh; it grew slowly for four months, and then rapidly; now

extends from junction of lower and middle third of thigh to within two inches of Poupart's ligament; is ovoid in shape, smooth, and elastic, and has throughout a faint pulsation; femoral artery is felt along outside of the tumour pulsating distinctly; no change in pulsation in ham and at the ankle; pressure upon the femoral at the groin stopped all pulsation, but did not diminish the size of the tumour; the sphygmograph placed upon any part of the tumour gave marked evidence of pulsation by the free movement of its pointer; on exploration blood flowed; tumour varied in size and distinctness of pulsation from day to day; diagnosis uncertain and femoral artery was ligated as the most rational procedure in the event of the tumour being an aneurism of the profunda or a solid tumour. Pulsation was arrested, and tumour diminished slightly in size; subsequently it enlarged somewhat. Gangrene of the limb occurred subsequently, and proved fatal. The tumour was fibrous and attached to the linea aspera; the femoral artery ran over its surface.

The sphygmograph was used in this case to test pulsation, and it proved that there was pulsation in all parts of the tumour. And yet it is to be noticed that the femoral artery ran along the outside of the tumour. This instrument would seem to have misled rather than aided the surgeon, as it indicated pulsation throughout the tumour, when that pulsation was only an impulse feebly communicated to the mass from an artery lying quite external. Little or no importance seems to have been attached to the fact that the pulsation in the ham and at the ankle was unchanged.

7. *Neuroma mistaken for Aneurism.*—Closely allied to the fibrous tumour is neuroma, which may be so situated as to receive the impulse of an artery and be mistaken for an aneurism. In the case reported by Mr. Earle (*Lond. Med. Gaz.*, vol. 16) the most careful examinations were made, and that, too, repeatedly by surgeons of St. Bartholomew's Hospital in consultation, and yet the mistake was made of ligating the subclavian artery for a neuroma of an axillary nerve. The error was not discovered until the patient's death from another disease five years after the operation, and when he was supposed to have recovered from the aneurism. The case has many points of interest worthy of special notice.

"T. B., æt. 54. iron-plate worker, had a pulsating tumour situated immediately below the left clavicle; had been gradually increasing ten months; size of half an orange; lower part hard and without pulsation; upper part softer and pulsation distinct; no additional evidence afforded by the stethoscope; supposed to be aneurism of the subclavian artery where it passes the clavicle; pulsation in the humeral and radial arteries as strong as on the healthy side; this circumstance and the firmness of the greater part of the tumour led to the hope that a spontaneous cure by obliteration of the aneurismal pouch might be effected without arresting the current in the direct course of the artery; treatment consisted in low diet, saline medicines, moderate and repeated bleedings, and applications of pounded ice; tumour remained stationary as to size, and its pulsation diminished; pulsation of the artery beyond the tumour remained free and undiminished; at a consultation all the circumstances were discussed, particularly the undiminished strength of the pulsation of the artery beyond the tumour; the prevailing opinion was that the force of the circulation below was a proof of the free ingress of blood into the pouch, which of course made the probability of a spontaneous cure very slight; the patient was now in better condition for the operation, and delay might possibly cause the tumour to increase, raising more the clavicle, and thus rendering the operation more difficult; it was decided to operate. On the third day following, the tumour seemed to be increasing in a direction beneath the clavicle, and on the next day the operation was performed. On introducing the

finger into the wound, the aneurismal tumour was felt pulsating, and the clavicle was considerably raised from the first rib. The bulk of the tumour was very slightly diminished after the operation, and the contents of the sac felt very firm. The patient's health continued very precarious for some time, but after his removal from the hospital it improved and his wound gradually closed; but he continued to have pain in the tumour, inflammation around it took place and finally suppuration, he returning to the hospital after a few weeks' absence to have the abscess opened. A large quantity of unhealthy pus was evacuated; after some time the opening was enlarged, and a quantity of thick matter, supposed to be laminated coagula, came away, after which the abscess healed, leaving hardly a perceptible swelling beneath the clavicle; the tumour also subsided. He returned to work, the pulsation at both wrists being almost equal in strength; complained of a sense of coldness and numbness down the left arm. From 1830 to 1835 he was under my occasional observation, and finally he was re-admitted with general dropsy and great exhaustion, under which he died on the second of July of the latter year. At the autopsy a tumour was found an inch below the clavicle, oblong in shape, two inches in length by one and a half in width, lying upon and in the direction of the axillary plexus of nerves. The axillary artery was firmly united to one side by dense cellular tissue, the other side being intimately connected with the axillary nerves. The tumour consisted of grayish dense substance divided by white lines extending through it in various directions. A large nerve of the axillary plexus was attached to the upper, and another similar nerve to the lower end of the tumour, both being split into filaments at either end, which extended into the interior and on the surface of the tumour. The subclavian artery had been ligated upon the first rib."

In reviewing this case Mr. Earle remarks that it "furnishes powerful negative evidence in favour of auscultation, as certainly the usual sound of aneurism was absent." It is true that the absence of auscultatory signs was in itself evidence of the non-existence of aneurism, but by no means conclusive. As has been seen in many other cases, auscultation yields very equivocal evidence of the existence of aneurism. There may be no bruit whatever detectable when aneurism is present,¹ and there may be a well-defined bruit closely approximating the aneurismal without the presence of aneurism, or finally, there may be every shade of bruit with or without aneurism, except perhaps the so-called aneurismal thrill when acutely marked in aneurism.

Another symptom in this case which received the attention of the consultation was the undiminished pulsation of the arteries beyond the tumour. Ordinarily this would be regarded as one of the more important signs of the non-aneurismal character of the tumour. In this case, however, it was construed as evidence of the free entrance of blood into the cavity of the aneurism, and unfavourably to a spontaneous cure. This opinion was evidently erroneous, for the volume of pulsation of the arteries beyond

¹ "Such was the case in a woman under Mr. Vincent's care at St. Bartholomew's Hospital, in whom an aneurism followed the occurrence of a longitudinal rent in the posterior tibial artery, on its anterior face. The sac being formed at the posterior part of the artery, the stream of blood seemed to enter it indirectly. Hence probably the absence of pulsation. Nor was there any bruit. The diagnosis was only made after a long course of treatment, by an exploratory incision, when amputation became immediately necessary."—*Holmes' System of Surgery*, vol. iii.

the tumour diminishes in proportion to the freedom with which the current of blood enters the aneurism. No variation in the pulse of the affected limb would indicate that the current was uninterrupted, and would lead to the conclusion either that no aneurism existed, or if it existed that the cavity was closed. And yet, as will appear in the course of this paper, aneurisms may exist, and the distal arteries pulsate with undiminished force.

We shall in a future paper consider the diagnosis of aneurisms from malignant growths, from pulsating tumours of bone, from enlarged thyroid, etc. etc.

ART. V.—*A Contribution to the Anatomy of the Jugular Foramen.*

By THOMAS DWIGHT, Jr., M.D., of Boston, Professor of Anatomy at the Medical School of Maine. (With three wood-cuts.)

THE objects of this paper are: 1st, to call attention to the great and, as far as the writer knows, undescribed variations of the jugular fossa, that part of the temporal bone which, together with the occipital, forms the *foramen lacerum posterius*; 2d, to consider the differences which the fossa, the foramen, and the neighbouring foramina present on the two sides of the same skull; and, 3d, the effect of these differences on the cranial circulation.

A. The size and shape of the jugular foramen depend to a certain extent on the formation of the jugular eminence and notch of the occipital bone, but far more on that of the notch of the temporal bone, while the lower aspect of the opening, and the jugular fossa for the enlargement of the internal jugular vein, depend almost entirely on the latter. The fossa is liable to great variations, and presents all the appearances intermediate between two extreme types, one of which is very common, and is the form usually described in text-books, while the other, though far rarer, is not rare enough to be called abnormal. It is astonishing that no mention of this latter form should be found in any of the modern systematic treatises on anatomy. In the seventh edition of Quain, we are told that "a smooth, rounded, and deep depression, the *jugular fossa*, lies internal to the styloid process, it is close to the posterior margin of the bone, and completes, with the jugular notch of the occipital bone, the *foramen lacerum posterius*." In many cases it is neither smooth, rounded, nor deep. There is no satisfactory description of it in Sappey, Cruveilhier, nor Luschka, nor, what is more surprising, in the admirable description of the bone in Henle's *Knochenlehre*.

The jugular fossa is situated on the inferior surface of the petrous portion, or, more correctly according to Henle, on the posterior external

surface.¹ The most frequent form consists of a thimble-shaped depression pointing upward, outward, and a little backward. (Fig. 1, *a*.) The rim of the thimble is usually well-defined, except behind, where it is lost in the border of a rough surface (*b*) which joins the end of the jugular eminence of the occiput; but sometimes the rim is wanting on the outer side so that the lower part of the wall of the fossa is formed on that side by the tympanic plate. A blunt crest (*c*)² separates the fossa from the *aqueductus cochleæ* and runs into the *processus infrajugularis* (*d*), a prominence on the posterior border of the petrous portion which assists to divide the foramen into an anterior and a posterior portion for the passage of the nerves and veins respectively.

Fig. 1.

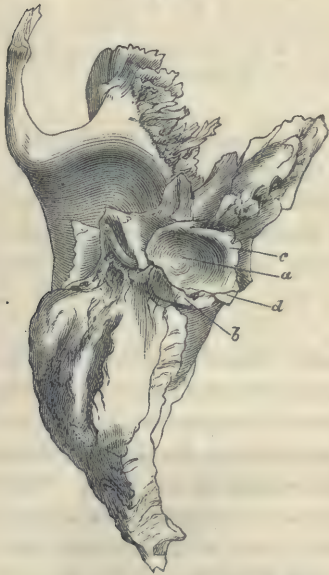
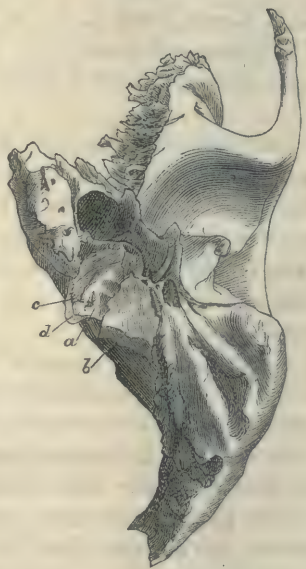


Fig. 2.



From this slightly amplified description of the most common form we pass to that of the least frequent, which is extremely puzzling to the student if he follows, as he should, the book on the bone. There is no thimble-shaped depression whatever, but merely an entering angle formed by two rough surfaces which meet in a groove running forward and outward. The posterior of these surfaces (Fig. 2, *b*) is for the junction with the jugular eminence, and is much larger than in the other type. The anterior one (*a*), nearly vertical, and slightly and irregularly concave,

¹ When the bone is *in situ* the highest part of the petrous portion is the ridge separating the surfaces commonly called superior and internal, excepting the point where the former surface is forced up by the superior semicircular canal.

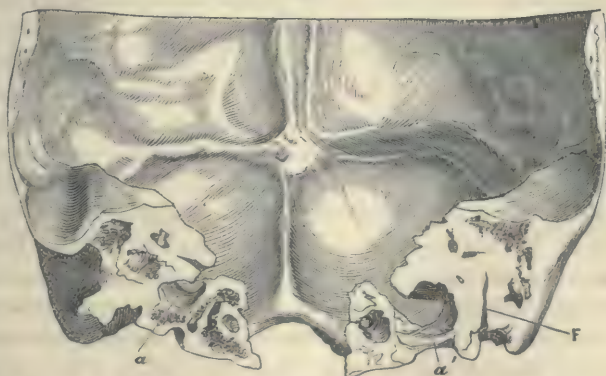
² Henle, *Knochenlehre*, s. 158.

represents the diminutive fossa. The inner and lower angle of the surface is prolonged into the infrajugular process (*d*), and its anterior edge (*c*) is very thick, taking the place of the blunt crest behind the aqueduct. In this form, one might imagine that the occipital surface behind, and the crest in front, had become enlarged at the expense of the fossa, of which nothing but the anterior wall remains. When the bones are joined to the occipital the effect is very striking; the foramen is reduced to a narrow slit, partially divided into a larger anterior and a smaller posterior one, by the very prominent infrajugular process.

All other forms appear to be intermediate; we may consider them as successively greater deviations from the former type. In the first grades the inner edge of the thimble disappears; then it becomes more shallow, till finally it is a mere concavity sloping outward and forward. As the fossa grows less, the anterior and posterior walls thicken as just described. It is the posterior or venous part of the foramen which suffers, the anterior undergoes little change.

Apart from variations in form, the foramen and the fossa may vary greatly in size. The depth and diameter of the fossa are equally uncertain. It is not too much to say that in two skulls of equal size the fossæ of one may have four times the capacity of those of the other, though made on the same plan. The foramina may vary as much as the fossæ and independently of them, though, as a rule, the size of the one is in direct ratio to that of the other. Both foramina of a skull may be decidedly above or below the average, but, as the next part shows, one is usually larger than the other.

Fig. 3.



B. The difference between the foramina of the two sides does not result solely from the quasi-accidental asymmetry of corresponding parts, but, as a rule, from a peculiar arrangement of the venous channels. The difference of the relations is well shown by vertical sections. Fig. 3 represents such a section through the head of a young subject, in which

there is a striking disparity between the foramina. The cut is made rather obliquely; on the right it is $\frac{1}{16}$ th of an inch in front of the stylo-mastoid foramen, while on the left it strikes the posterior wall of the canal (*f*) leading to it, yet such is the asymmetry of the skull, that while on the left the jugular foramen (*a*) is fully opened, the section on the right is just behind its orifice, and shows the lateral sinus (*a'*) turning over the jugular eminence.

To ascertain whether there is any fixed relation between the size of the opening, the shape of the fossa, and the size of the anterior and posterior condyloid foramina, the writer has examined very carefully the skulls in the museum of the Boston Society of Natural History, and those in the private collection of his friend Dr. J. Collins Warren. After the rejection of some more or less mutilated specimens there remained 159 ancient and modern, representing races from nearly all quarters of the globe. The first step was to study the variations in size of the jugular foramina of the two sides of the same skull. (The posterior or venous portion is, as already intimated, the important part as influencing the size of the opening.) This foramen was larger on the right in 104 cases, on the left in 38, and those of the two sides were equal in 17. Of the 142 cases in which one foramen was larger than the other, the fossa was more capacious on the same side as the larger foramen in 93 cases, on the opposite side in 19, and those of the two sides were equal in 30. In the same 142 skulls the posterior condyloid foramen was larger on the same side as the larger jugular foramen in 53, on the other side in 37, and they were equal or absent in 52.¹ In the same series the anterior condyloid foramen was larger on the same side as the jugular in 16 skulls, on the other in 11, and the two were equal in 115. It should be mentioned that the differences between the anterior condyloids were, with one or two exceptions, extremely slight. There does not appear to be any definite relation between their size and that of the posterior condyloids. The above figures are obtained by adding together the results of the examination of the two main classes: those in which the jugular foramen was larger on the right and left respectively. In the 17 skulls in which they were even, the neighbouring parts, though not quite alike, presented nothing worthy of description. To sum up roughly, we may say that of 159 skulls about two-thirds had the jugular foramen larger on the right side, about one-fourth on the left, and about one-ninth had the two equal; further, that about two-thirds of those having the foramina unequal, had the larger fossa on the same side as the larger foramen, while less than one-seventh of them had it on the opposite side; and lastly, that the posterior (and in a less degree the anterior) condyloid foramen was much more frequently larger on the same side as the jugular foramen than on the other.

¹ When but one posterior condyloid was present it was held to be larger than its fellow.

C. The application of what precedes to the cranial circulation is very simple. It is clear that, as a rule, the greater part of the blood tends to seek an exit on one side. It has long been known that one jugular vein is commonly larger than the other, and it is shown that the jugular fossa of that side is generally shaped so as to lodge a larger dilatation.

Fig. 3 shows the correspondence in size of the lateral sinus, the foramen, and the fossa of the same side. It appears also that the condyloid foramina, both of which transmit veins, show no compensatory disposition, but on the contrary are usually larger on the same side as the larger jugular foramen.

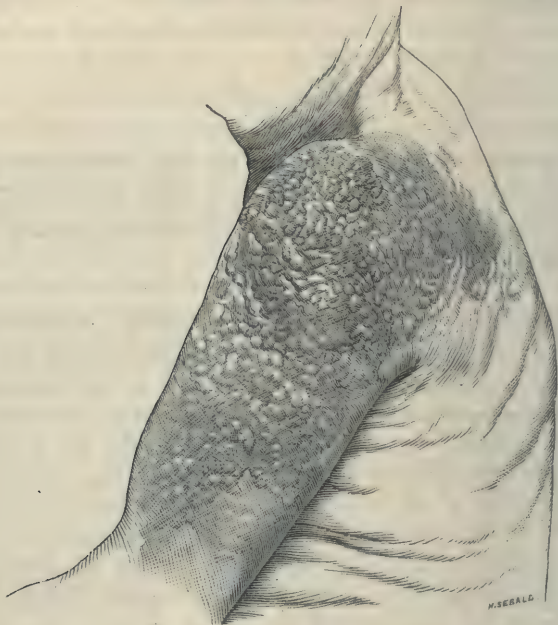
ART. VI.—*Case of Painful Neuroma of the Skin.* By LOUIS A. DUHRING, M.D., Clinical Lecturer upon Diseases of the Skin in the University of Pennsylvania, and Physician to the Dispensary for Skin Diseases, Philadelphia. (With a wood-cut.)

UNDER the name of painful neuroma of the skin, I propose to describe the following case which has been under my observation for the past six years, and was kindly placed at my disposal by my friend Dr. F. F. Maury, in whose ward at the Philadelphia Hospital the man is at present.

David W., aged 70; Irish, boiler-maker, but of late his trouble has incapacitated him for any kind of labour. His previous health has been excellent and none of his family or relatives ever presented any disease similar to that from which he is suffering. About ten years ago he first noticed the presence of a few, small, round nodules, situated in the skin of the left shoulder, attended with decided itching, but without pain. These nodules soon multiplied and increased in size. For four years they continued to appear in numbers, and by the end of this time the arm and shoulder were well studded with them. For the past five years their increase in number has been slower, but new ones have continued to appear up to the present time. Some of the older nodules have grown somewhat in size during the past five years. He is quite positive that it was not until three years after the first elevations were noticed, that there was any pain in or about them. Such are the important points in connection with the early history of this case. Since I first saw the patient, six years ago, there has been but little change in the appearance of the growth, with the exception that new scattered tubercles have developed at various points.

The disease is now characterized by the presence of numerous small, rounded, hard nodules, occupying the left scapular region, shoulder, and outer surface of the arm, as far down as the elbow, as is seen in the accompanying illustration. They are incorporated with the skin and subcutaneous tissue; vary in size from that of a pin's head to that of a large pea, and at certain points are situated closely together. They are elevated from one to four or five lines above the level of the surrounding healthy skin, and present a marked tubercular, knotty appearance. They are

firmly seated in the skin, and are in no instance pedicellated. Over the shoulder and arm, at the insertion of the deltoid muscle, the tubercles are closely packed together, and the intervening skin, though not tuberculated, is involved with the same new growth. At this point it presents a solid mass of hard tubercular tissue. The surface is rough, and nodular; about the scapular region as well as further down the arm, the nodules are more scattered and isolated, the skin between them being perfectly normal. The tubercles are scattered in irregular form and without definite arrangement. They do not occupy any particular nerve tract. The affected side of the body, including the arm,



corresponds in size with the healthy side. The diseased skin varies in color according to locality. Where the affection is most marked, about the shoulder, the tubercles are of purplish pink color, with a somewhat mottled appearance. Where they are isolated, their color is pinkish and lighter in shade, being more of the hue of the normal skin. But the color of the whole surface is subject to great variations, according to the position of the limb, external applications of one kind or another, as cold or heat, and the subjective symptoms. The tubercles are here and there covered with fine yellowish-white laminated scales, consisting of imperfectly formed epidermis, which are firmly attached and cast themselves off only slowly. These scales give to some of the older tubercles a whitish, glistening appearance. There are no tubercles or signs of the growth on the under surface of the arm, from the axilla down to the elbow. The skin here is smooth and normal in every respect, and can be freely handled without producing any uneasiness or pain. The tubercular mass about the shoulder and arm is warmer to the touch than other portions of the arm. During a paroxysm the part is quite hot, and remains so for some time after the

pain has subsided. The nodules are all more or less painful when touched or pressed upon. There are no bloodvessels visible upon the surface of either the central mass or any of the distinct tubercles.

The original starting point of the affection appears to have been at or about the insertion of the deltoid muscle, for here the tissues are now thickest and the pain most severe. During a paroxysm of pain the tubercles and skin involved change color rapidly, passing through various shades until they become purplish and even livid at times. As the paroxysm is ushered in and while it is at its acme, the parts are seized with a quiver, which extends over the whole arm and is paroxysmal, occurring every few seconds during the height of the attack.

Intense pain, of a paroxysmal nature, constitutes the distressing feature of the disease. This was developed gradually, first showing itself about three years after the appearance of any external manifestation, and soon increased in severity, keeping pace with the development of the disease. For the last five or six years the pain and paroxysms have been about the same in degree and character. The pain during a paroxysm is excruciatingly severe, and from my repeated observations of these attacks, I doubt if any words can fully express the amount or character of the suffering the patient undergoes. As the pain comes on he endeavours to support the affected arm with the other hand, pressing it towards the body. But he dares scarcely touch it, for so sensitive is it now that even the breath blown upon the surface excites additional pain. At one time he endures the paroxysm in the standing position, or he seats himself upon a chair or the floor, and remains in a cramped condition, unmindful of all surroundings, until the extreme pain ceases. Frequently his sufferings are so severe that he is unable to contain himself, and he cries out so vehemently and piteously that he can be heard all over the building. Frequently I have seen him roll over the floor in agony, unable to control himself.

This very intense suffering remains at its height but for a short time, from ten minutes to a half hour, when signs of abatement are noticed, and in an hour or two the attack subsides. In attempting to describe the nature of the pain, beyond the fact that it is indescribably painful, we can learn but little concerning it. He has frequently, however, compared the sensation to a stream of ice-cold water running down the arm, together with the pain of burning and pricking.

The paroxysms vary in duration and in frequency of occurrence. They also vary in intensity, according to the immediate cause which has occasioned them. When slight an attack lasts perhaps ten minutes, or if severe an hour. If quiet and undisturbed, and with the part protected, there may be but one or two paroxysms in the course of the day, but if the patient becomes worried or excited from any cause, or if the arm be exposed to violence, the attacks are much more frequent and correspondingly violent. Exposure to cold invariably causes pain, while rough handling or pressure of any kind is inevitably followed by severe paroxysms. Any movement of the arm, as necessarily occurs when his garments are changed, always gives rise to an attack of more or less severity. The lightest draught of wind is all-sufficient to produce a paroxysm. The pain is influenced very much by the condition of the weather. Of this fact the patient assures me positively, and the statement is confirmed by the nurses and his fellow-patients who have him continually under observation. He is always much worse the day preceding a storm or a great change in the weather. He is always worse and suffers more during a rainy or snowy season. He is decidedly better in summer than winter.

The area of pain is much larger at the present time than it was a few years ago, but this is accounted for by the development of new tubercles in tissue previously healthy. The pain in a severe paroxysm shoots rapidly down the arm, even as far as the knuckles; it also spreads itself over the pectoral region, and up the side of the neck and head. The patient complains of a buzzing, singing sensation in the head, which he affirms is almost constant and of late has been increasing in intensity. A neuralgic pain is also present in the head at times, which is liable to exacerbations during a paroxysm. His general health and condition are remarkably good considering his sufferings. His appetite is not wanting, and when free from a paroxysm he is able to rest and sleep quite well. The paroxysms, however, frequently awake him out of a comfortable sleep.

Before entering the Philadelphia Hospital, with a view to obtain alleviation of pain, he submitted to having the arm and shoulder thoroughly blistered on several occasions, which proceeding, he thinks, gave him some relief for a period of six weeks. But his memory is rather vague concerning the past, and it is to be considered that this statement cannot be accepted without reserve. Since his admission to the hospital various means and remedies for his relief have been tried, but without the desired result. Hypodermic injections of morphia have frequently been administered during the paroxysms, with a view of checking their violence, but even with large doses the end has scarcely been attained. The relief afforded by this means is not material, and the after-effects upon his head are so unpleasant that he prefers to endure the pain. Steam baths to the part have also been employed, but with little relief. Direct dry heat undoubtedly affords more ease than any other application that has been made, and he is never so comfortable and free from pain as when sitting close to a hot stove or fire with the arm exposed to the heat. When a paroxysm comes on he at once seeks the fire and there remains until the pain has abated.

With the hope of ascertaining the nature of the disease, the man consented to the excision of several of the tubercles. Three were selected in different regions as being most characteristic of the affection. Two of these were situated in the central mass, about the shoulder, and the third was a well marked, comparatively recent, isolated tumor, seated in the skin of the back about one inch to the right of the spinal column. The patient was etherized, and the growth removed, care being taken to include a considerable portion of the subcutaneous tissue with the incision. Unusually severe pain, continuing for several days, followed the operation, due in a great measure to the state of excitability which the whole proceeding occasioned, excitement of mind being always followed by an aggravation of the sufferings. Very little hemorrhage occurred. The wounds were very slow to cicatrize. The nodules directly after removal were of the size of large peas, irregularly rounded and defined; firm and quite hard to the touch and of a dirty white color. Cutting one of them open, vertically, the internal surface presented a dull white color affording scarcely any blood or fluid upon pressure. The cut surface appeared homogeneous and solid throughout to the naked eye. The growths were not found to possess any filamentous attachments of any kind. The specimens were immediately placed in alcohol and a solution of bichromate of potassa preparatory to microscopical examination. After carefully imbedding small vertically cut pieces in wax, thin sections were made with a razor and examined with glycerin. Some of the specimens were stained with a chloride of gold solution

of one-half per cent. strength, while others were coloured with a carmine solution. Many sections were submitted to close examination, with the following result. The epidermis was irregular and uneven in structure, and here and there completely broken down. The rete was imperfectly developed in certain of the sections, at one point showing normal growth and arrangement, while in other specimens there appeared an abnormal distribution of the younger cells. A singular concentric formation of the cells of the rete was here and there noticed, resembling the globular arrangement of epithelioma, but this condition was not universal, occurring only in certain sections. The papillary layer was irregularly developed. The papillæ were here and there greatly hypertrophied. The corium was abnormally infiltrated with new connective tissue growth which was firm in structure. The tissues beneath and the mass of the specimen consisted of a solid, resistant looking connective tissue, irregularly developed and uneven in arrangement. The bulk of the tissue was old in appearance and well felted together, the new cell elements being entirely wanting. The connective tissue fibrils were closely packed in places forming wave-like bands. There were also numerous free fibrils of elastic tissue scattered here and there through the specimens, particularly in the deeper portions of the tubercle, where in places they formed a delicate network. Here and there filaments appeared isolated, resembling very much fine nerve fibres. But among the many sections examined with the utmost care, it was impossible to find either nerve trunks or branches.

This case, I venture to remark, is without a parallel in medical literature. After careful research I have been able to find only two cases which bear any likeness to it, and these, it will be observed, present symptoms quite different from those in our case.

In plate VII. of Dr. Smith's atlas of neuroma will be found the portrait of a man whose disease bears a striking resemblance to that under our care, but upon investigation it will be noticed that the affection differs in important particulars, and that, though at a glance it appears to be the same form of disease, it in reality is not.

The case is that of a farmer named Michael Lawlor, æt. 32, admitted to the Whitworth Hospital, under the care of Dr. Corrigan, with symptoms of gastro-enteritis. During the investigation of the case, the abdomen and body were found to be studded with numerous small tumours situated *beneath* the integument. Many of them were about the size of peas, movable, and of firm consistence. But some were larger, and one existed about the tuberosity of the ischium, which was the size of a swan's egg. It was slightly movable in the transverse direction and equally solid throughout. The integuments were healthy, and could be moved freely over the surface of the tumour, pressure upon which caused pain. The sensation was of numbness rather than of pain, the patient stating that the limb felt as if it were asleep. The large tumour was the first to which the notice of the patient had been attracted and was of the size of a gooseberry when first observed. Its appearance was preceded by a sensation in the part "like the trickling or dropping of cold water down the limb."

Another tumour, larger than that just described, of whose existence the patient was not aware, was found placed deep in the hypogastrium, and another, the size of a walnut, situated upon one of the branches of the right anterior crural nerve. These three tumors were painful when pressed upon, the others in great number over the body were the source of no uneasiness. They were all movable from side to side, were oval in form, and of solid consistence. The

patient became very much emaciated from the effects of the gastro-enteritis, and in this condition it was evident that the tumours were seated along the course of nerves. The patient died, and the autopsy revealed these tumours to be seated upon the nerves in great numbers. Indeed the examination disclosed the fact that all the nerves of the body were more or less affected with these neuromatous tumours, more than two thousand distinct growths having been discovered.

This is perhaps the most interesting example of general multiple neuroma upon record, but from a review of the prominent features it is manifest that the disease cannot be considered as identical with that of David W. The subjective symptoms here are altogether different, as well as the form of growth itself, which must be regarded as a typical instance of the ordinary multiple neuromatous tumour. The corium, so markedly affected in our case, is in no way involved, the tumours being situated deep beneath the skin.

The other case to which I have referred as being somewhat similar is reported by Vallender and quoted by Virchow. But the symptoms in this instance likewise are very different, a few of the larger tumours here being alone painful and these only upon pressure.

But although the case of David W. is unique as regards development, the general features are of such a character as to admit of no hesitation in deciding to which class of pathological formations it belongs. Without doubt to the neuromata, for here only will the affection find its position in pathology. Viewing the case on the other hand, from a clinical standpoint, with no other group of morbid growths is it possible to account for the violent symptoms accompanying the disease.

Reported examples of general multiple neuroma, where the tumours occur in numbers, are rare, Virchow estimating that probably not more than thirty cases are upon record. They are usually free from the pain which is so constant with the single neuroma, a fact very difficult to account for, but which is mentioned in connection with most of the reported cases, as for instance in the case of Michael Lawlor. We find the symptoms in our case, however, completely at variance with this usually accepted statement, pain not only being present, but also most violent neuralgic paroxysms, exactly like those described in connection with the painful subcutaneous tubercle. Were these symptoms alone considered, the case might well be grouped with this latter tumour, so minutely do they correspond. But there are important points of difference between our case and the painful tubercle. This little tumour, as described by Wood, Descot, Dupuytren, and Paget, is never a multiple growth, but a solitary tumour, rarely ever more than one existing upon the same patient. Moreover it is always spoken of as being situated *beneath* the subcutaneous tissue scarcely perceptible to the eye. It is also always found to be freely movable under the skin, and never in any way attached to it or involved with it. Additional points of difference there are which preclude the two forms of disease from being considered identical.

The writer is indebted to the following works which have been of invaluable assistance in the study of the case under consideration: Virchow, *Die Krankhaften Geschwulste*, Berlin, 1863; Descot, *Affections Locales des Nerfs*, Paris, 1825; W. Wood, *Edinburgh Med. and Surg. Journ.*, 1812; *Trans. of Med.-Chir. Soc. of Edinburgh*, 1829; R. W. Smith, *A Treatise on the Pathology, Diagnosis, and Treatment of Neuroma*, Dublin, 1849; Craigie, *Elements of General and Pathological Anatomy*, 1848; Miller, *Principles of Surgery*, 1844; Wedl, *Pathological Histology*, Syd. Soc. translation, London, 1855; Dupuytren, *Leçons Orales de Clinique Chirurgicale*, Paris, 1832; Paget, *Lectures on Surgical Pathology*, London, 1870.

ART. VII.—*Remarks on Interstitial or Syphilitic Keratitis, with Report of Cases.* By SAMUEL THEOBALD, M.D., Ophthalmic and Aural Surgeon of the Eye and Ear Dispensary, Baltimore.

THE correctness of the views first advanced by Mr. Jonathan Hutchinson, of London, as to the syphilitic nature of interstitial keratitis, is still questioned, and, in some quarters, even stoutly denied. If I could have entertained any such doubts, after eight months' constant attendance upon Mr. Hutchinson's clinic at Moorfields Ophthalmic Hospital, London, during which time I frequently saw him demonstrate the connection, which he has shown to exist, between this form of ophthalmia and inherited syphilis, my experience, since returning home, would certainly have dispelled them.

Mr. Hutchinson remarks that this disease, as well as the notched and pegged teeth that so often accompany it, and which he has also shown to be dependent upon congenital syphilis, is much more prevalent among the inhabitants of certain countries than of others, when the dissemination of syphilis is equally great. Among the English and Americans, and, as I have been informed by Snellen, among the Hollanders, the typical teeth, and interstitial form of keratitis, are of frequent occurrence, while in Germany and in Austria they are rarely seen. Thus, during six months spent in attendance upon the clinic of Arlt in Vienna, I saw but one case which at all resembled this disease, and in this, the characteristic teeth were not present. It was diagnosed as scrofulous corneitis, the previous history of the patient, a girl about fifteen years of age, not being especially inquired into.

It is on account of this peculiarity of distribution, no doubt, that many of the Continental, and especially the German ophthalmological authorities, who do not find the views of Mr. Hutchinson confirmed by their own experience, are somewhat sceptical about accepting them.

Before its syphilitic nature had been recognized this disease had attracted the attention of other English writers upon the affections of the eye, and under the name of "scrofulous corneitis," had been described by Mackenzie, as a disease "specifically different from every other form of ophthalmia."¹ The prominent characteristics of interstitial keratitis, as pointed out by Mr. Hutchinson, are, the *ground-glass* appearance which the cornea assumes from *interstitial deposit*; the absence of ulceration, and of any tendency to pustules; the comparatively small amount of sclerotic or conjunctival congestion; the chronic character which it exhibits; the almost invariable tendency to affect first one eye and then the other; the age of its subjects seldom under five, or over eighteen years; the fact of its usually affecting the elder children of the family; and, lastly, the ultimate result which, as regards vision, is very much better than could have been hoped for, judging from the opaque condition of the cornea in the early stages of the attack.²

Intense photophobia, as in true scrofulous or phlyctenular corneitis, is generally present during the height of the disease, and when the inflammatory symptoms are marked, the conjunctival and subconjunctival injection is pronounced; the vascular development often encroaches upon the cornea, imparting to it a salmon-coloured tinge, and at certain points upon its periphery, where the vessels are more closely crowded together, giving it a peculiar appearance, as though it had been painted, in a radiate direction, with browish-red paint. Under such circumstances, the surface of the cornea often becomes roughened and granular, and vision is reduced to mere quantitative perception of light. In the worst cases the iris may become involved, posterior synechia, and occlusion of the pupil, perhaps, resulting; or the inflammation may extend to the ciliary body and choroid, as evinced by the diminished tension of the globe, and the subsequent choroidal atrophy. When these complications occur the impairment of vision will, of course, be more lasting.

In this connection it may not be out of place to mention a fact which I have so often observed as to place it beyond the domain of accident, that in syphilitic inflammations of the uveal tract, as opposed to traumatic, sympathetic, and glaucomatous inflammations, in which the opposite condition exists, the intra-ocular tension is almost always diminished, and this is equally true whether the affection be due to acquired or inherited syphilis.

In several of the following cases, as will be seen, I was able, after the diagnosis had been made from the appearance of the eyes, to ascertain that the patients were subjects of inherited syphilis; and in all of the others there existed various circumstances which went to confirm the opinion of Mr. Hutchinson, as to the invariably syphilitic nature of this form of

¹ Syphilitic Disease of the Eye and Ear, Hutchinson, London, 1863, page 26.

² Ibid.

ophthalmia, and it is on this account, mainly, that they seem worthy of publication. The peculiar physiognomy, which is referred to in the following notes, and which Mr. Hutchinson has described as characteristic of inherited syphilis, consists, besides the notched and pegged teeth, of a broad and sunken bridge to the nose, a prominent and ill-shapen forehead, and a coarse and flabby skin, presenting, perhaps, scars and pits upon the face and forehead, and cicatrices of old sores at the angles of the mouth.

CASE 1. *Double interstitial keratitis; characteristic teeth and physiognomy; history of infantile syphilis, and confirmation of its being inherited.*—A boy, aged 8, the eldest of several children, the others healthy, came under my care about the 1st of January, 1872; both eyes had been affected for several months, and he had also been troubled for some time by slight pain and swelling in the ankle and wrist-joints. The prominent symptom, at this time, was extreme photophobia. Upon the supposition that the case was one of phlyctenular ophthalmia, I ordered a solution of atropiæ sulphas, gr. j to aq. dest. ʒj, to be dropped into the eyes every three hours; ung. belladon. to be rubbed on the forehead, and syr. ferri iodid. to be given internally.

In a few days the photophobia had so far disappeared, that I was able to examine the eyes, and learn the true nature of the disease. The infantile history being inquired into, it was ascertained that he had been delicate and puny for some time after birth, and had had sores about the anus, rash on the body, and snuffles. He had not yet cut his upper teeth, and his under teeth were not peculiar, but in other respects he presented the characteristic physiognomy, having a prominent forehead, sunken bridge to his nose, and several scars about the face and forehead.

Satisfied that the affection was due to inherited syphilis a mild specific treatment was at once commenced; minute doses of hydrarg. bichlorid. in connection with syr. sarsaparillæ being administered three times a day.

Jan. 10. Eyes wide open; photophobia entirely gone. Both corneæ present the "salmon-coloured tinge," and are completely opaque; so that it is impossible to discern the iris in either eye. The conjunctival and subconjunctival injection is very decided, especially in the left; and the surface of the cornea, in this eye, presents a roughened and granular appearance. He can see the direction of window, and, while looking towards it, can tell when a hand is passed before the eyes.

15th. General health, appetite, etc., reported to be much better; he has not complained of pain in joints for some days. Since last visit I have seen the family physician, and learned from him, that *he had treated the father, at intervals, for a long period for tertiary syphilis.* Ordered atropia to be instilled once a day only.

22d. Cornea of right eye a little clearer, and has lost the salmon-coloured tinge, which is, also, less marked in the left. As the photophobia has disappeared entirely, directed the ung. belladon. to be discontinued, and the atropia to be used every other day.

Feb. 8. Both corneæ clearer; iris visible in right eye, through any part of cornea, except just in its centre, and in left at one or two points. He is able to distinguish bright colours. Discontinued syr. ferri iodid.

March 7. Clearing of cornea has continued steadily; he is now able with the right eye to count fingers promptly, and with the left doubtfully.

April 2. Slight increase of subconjunctival injection in left. The ciliary

region is sensitive to the touch, and the intra-ocular tension reduced to — T 1. Increased the dose of hydrag. bichlorid. and syr. sarsaparillæ.

17th. Was able, by oblique illumination, the opacity having diminished, to examine the condition of the pupils and irides. Although the atropia (gr. j to 3j) has been used as directed, the right pupil is seen to be imperfectly and irregularly dilated, and the iris itself thickened and muddy. The left pupil is less dilated than the right, and the iris is in a like condition. Ciliary region of left eye no longer tender, and T very slightly below normal. Ordered sol. atropiæ gr. iv to 3j to be dropped into eyes once a day, in order to dilate pupils.

24th. Right pupil well dilated; left very slightly so. He can count fingers promptly with left, and with right can distinguish one or two letters of Snellen's types, No. LXX, held close to the eyes.

It is unnecessary to follow out the details of this case further, as they present no points of special interest. Suffice it to say, that he is still under observation, and has continued, at intervals, to take the mercury and syr. sarsaparillæ in somewhat diminished doses, and has also taken some iodide of potassium. Under this treatment he has gained flesh, and his general health has improved. The pupils having both dilated well, and no synechiæ being present; the atropia was discontinued some time since. The corneæ have continued slowly to clear, and the eyes are now free from redness. His vision has so far improved, that he is able to run about and play with his companions on the streets, and can read Jaeger's types, No. 19, and Snellen's No. XX, with facility. There is still considerable diffuse cloudiness in both corneæ, which is, unfortunately, most dense in their centres. This is, however, gradually lessening, and the sight will, eventually, be much better than at present.

In September last, his left superior central incisor tooth slowly cut its way through the gum. It was not peg-shaped, but presented the typical notch. When last seen in February, of the present year, this tooth, though five months old, had obtained but half its proper length, and its fellow had not yet made its appearance.

CASE II. Double interstitial keratitis in a mulatto girl; characteristic teeth; history of infantile symptoms, and of syphilis in patient's mother.—A girl, age 13, tall and stout for her age, weighing over a hundred and fifty pounds, and looking to be, at least, 20 years old, was brought to my office, June 20th, 1872, by her father, a mulatto. The right eye had been affected for four months; the left had been slightly inflamed for a few days only. She had been under the care of an oculist, but the syphilitic nature of the affection had apparently been overlooked. The right eye presented, at this time, a very characteristic appearance; the cornea being diffusely hazy, its epithelium granular, and the subconjunctival congestion considerable. The appearance of the left eye was much less characteristic, there being slight peri-corneal redness, and photophobia, and a few punctate opacities on surface of cornea, but no interstitial haziness. The sight of left eye was but little impaired, but she was only able to count fingers with right. Upper central incisors were very wide apart, dwarfed, and notched, but not pegged. The other teeth were also typical, especially the canines. Satisfied of the nature of the affection, I asked the father if he had ever contracted syphilis. He denied having had it, but gave the following history, which was afterwards confirmed, in every particular, by his wife.

His wife, also a mulatto, had had several children after their marriage; they were all healthy at birth, but had died young from scarlet fever, etc. Another child was born, which was also quite healthy; but when a few months old, contracted a sore upon its mouth from a negro woman, who lived in the house at the time, and who had herself contracted syphilis, as was known, from her husband. The child in nursing, communicated the sore to the mother's nipple; and she, afterwards, had a slight rash on her body, but no other syphilitic symptoms. The child had a rash, from which it recovered; but died when three years old, of scarlet fever.

Some months after this, the mother had a miscarriage, the child being dead at birth, and covered with a rash. She afterwards had another child, which was born at full term, had a rash on its body, and died when quite young. After this the patient was born. She also had a rash when a baby, and soon after became afflicted with ozæna, which still persists.

A specific course of treatment similar to that adopted in Case I., was at once commenced, and a sol. of atropia (gr. j to $\frac{3}{4}$ j) was ordered to be dropped into the eyes three times a day. Under this treatment, they very soon began to improve, and the cornea of the right eye to clear.

Aug. 17. Subconjunctival injection much less in the right eye, and the cloudiness of the cornea greatly diminished; left eye no worse than when first seen, but is little changed, and still presents some superficial redness about the borders of cornea. Right has $V = \frac{20}{cc}$, and can read a few words

of Jaeger, No. 10. After this, her eyes being better, she became less concerned about them, and contrary to my instructions, she stopped taking the remedies soon after seeing me, and did not report again until Dec. 30th, when she came to say they had not been quite so well for a few days. There was still slight redness in right eye, and considerable haziness of cornea, although she was able with it to read Jaeger, No. 8, and with the help of a convex glass, + 10 (her accommodation being paralyzed by atropia), to read with some difficulty, Jaeger, No. 5. The left eye showed no signs of inflammation. I directed her to take $\frac{1}{48}$ gr. of hydrag. bichlorid. in solution, three times a day, and to use atropia occasionally. In spite of this treatment, however, the threatened relapse was not checked, but the eyes continued to grow worse, so that when next seen, Feb. 3, 1873, the left eye was slightly red again; the corneal opacity and subconjunctival injection in the right much greater than when last seen. Under these circumstances the combination of hydrag. bichlorid. and syr. sarsaparill., which had been administered, apparently with good effects, when she first came under my care, was again prescribed.

March 4. She was seen for the last time, and, although she admitted that she had not taken the medicine regularly, both eyes were decidedly better. She was directed to continue the same treatment and report in a few weeks, but has not been heard from since.

CASE III. *Double interstitial keratitis; suspicious history and teeth.*—A boy, æt. 9, was brought to my office, Aug. 21st, 1872. He had been complaining of light hurting his eyes for a week or two, but they had been red and inflamed only four days; the right was first affected. Both corneæ presented the characteristic "ground-glass" look, and were surrounded by well-marked zones of conjunctival and sub-conjunctival congestion. The corneæ were not so opaque but that the pupils could be distinguished. The photophobia was excessive, so that vision was not tested. The pa-

tient's father, who had been a dissipated man, died from the effects of an injury. The mother was healthy; she had had three children; the patient was the youngest, and the only one living, the others died in infancy. She had never had any miscarriages; but was ill for a long time after the birth of her first child, which "pined and dwindled" till it died. It had no rash. The patient's physiognomy was not peculiar. His superior central incisor teeth, however, were wide apart, and unlike in shape; one of them being considerably broader at its lower extremity than it was nearer its base. The deciduous teeth were very carious, and much worn away. A minute quantity of bichloride of mercury in combination with syr. sarsaparillæ was ordered to be taken three times a day, and a sol. of atropia to be instilled into each eye night and morning.

Sept. 5. Photophobia so great I could not get a look at eyes. His mother says they seem better now, however, than they were a few days since. He has been so blind with them as to be unable to get about the house. Ordered ung. belladon. to be applied to forehead and brows; other remedies to be continued as before.

19th. Has been steadily improving since last visit. Photophobia less and sight better. The right eye nearly free from redness, and the corneal opacity much diminished. The opacity and redness are more decided in the left than in the right eye. Ordered to stop ung. belladon., and to continue other remedies. Has not reported since.

CASES IV. and V. *Interstitial corneal opacities in two sisters; the results of keratitis in childhood.*—Besides the diffuse haziness of both corneæ in the elder sister, the atrophied condition of the irides showed that they also had been diseased. Her vision being tested, it was found that with the right she could only count fingers, with the left $V = \frac{10}{CC}$.

The corneal opacities were not sufficient to account for this defect of sight, but the ophthalmoscope revealed in both eyes extensive choroidal atrophy, with large, irregular-shaped pigment deposits scattered about the fundi; and secondary atrophy of the retina and optic nerves, most marked in the right, evidently the result of former choroido-retinitis. She presented the characteristic physiognomy in a striking degree, having a prominent forehead, broad and sunken bridge to nose, and ill-shapen and defective, though not typically formed, teeth. The eyes were first affected when she was a child, and the history of the disease, so far as it could be obtained, confirmed the conclusion to which their present appearance had led me.

The second sister was seen subsequently, and here, according to the usual rule, the condition of the eyes indicated that the disease had been much less severe, and that the deeper structures had not been involved, as in the elder sister's case. The only evidences which remained of the keratitis, with which she had suffered in childhood, were slight, but very characteristic, nebulous opacities in both corneæ. There was nothing peculiar about the physiognomy or teeth. She remembered that, when quite a young girl, she had been confined to the house for months on account of her eyes; that they were extremely sensitive to light, and that for a time, she had been almost entirely blind. She is now able to read ordinary newspaper print, by a good light. The younger children of the family were healthy and had never suffered with their eyes.

CASE VI. *Double interstitial keratitis; characteristic physiognomy and teeth; history confirmatory.*—A girl, aged 16, was brought to me

Dec. 30, 1872. Her right eye was free from disease. The left had been inflamed about two weeks, and the ground-glass appearance of the cornea was well marked. The opacity was not sufficiently dense to prevent the iris and pupil being seen. There was but little photophobia or redness, and no sensitiveness of the globe to the touch, but the tension was reduced to — T 1, and she complained of pain at times over the eye. She was able, with this eye, to read Snellen's types, LXX, at the distance of a few inches. She had a prominent ill-shapen forehead, and having lost the bones of her nose from ulceration in infancy, the soft parts, from want of support, had fallen in, and her face presented the unsightly appearance which characterizes this deformity. She is said to have had no rash or other symptom of syphilis in infancy, except the disease of her nose. The teeth were typical. The lower incisors were small, worn away at their edges, and somewhat peg-shaped. The superior incisors, of which there were only three, the right lateral incisor appearing never to have been developed, were notched and pegged to a striking degree.

Her father and mother were both alive, and were said to be healthy, except that the mother suffers with rheumatism. The father was reported to be a "good-for-nothing, worthless fellow." The mother had lost two sons and three daughters, older than the patient. They all died in infancy, except one daughter, who, when 13 years old, was taken with a severe headache in the morning and died before night. There were two sons older, and one daughter younger, still living. One of the sons had had disease of his eyes, and had lost the sight of one of them. Satisfied of the syphilitic nature of the affection, I ordered $\frac{1}{8}$ gr. hydrarg. bichlorid., to be taken three times a day, and atropia to be applied to the left eye.

1873, Jan. 30. Has been taking the medicine, and using the drops regularly. The inflammation and opacity in the left eye have, notwithstanding, increased; and the right eye presents signs of commencing keratitis, the cornea being slightly hazy, and surrounded by a zone of subconjunctival injection.

As she did not report again after this date, the further progress of the case is not known.

CASE VII. *Double interstitial keratitis; characteristic teeth and physiognomy; history of infantile syphilis in patient, and in her elder brother.*—A girl, aged 9, was brought to Eye and Ear Dispensary, Dec. 31, 1872. The left eye had been inflamed about three weeks, and the cornea presented the usual interstitial haziness and salmon-coloured tinge, from the development of bloodvessels in its structure. Its surface was lustreless and granular; and the conjunctival and subconjunctival congestion was very pronounced. Photophobia slight, T n. Pupil and iris visible; was able with this eye to count fingers, and recognize several letters of Jaeger No. 24. The right eye presented no signs of keratitis; but the ophthalmoscope revealed in it a very extensive posterior staphyloma, and a correspondingly high degree of myopia.

The patient's mother, who came with her, was healthy. She had never had any miscarriages. The father died, several years ago, of "consumption." There had been but two children born, the patient, and a boy, older. The latter had, soon after birth, "sore eyes," rash and sores upon his head and body, and about the anus, which were attributed to scrofula. The patient was similarly affected except the eyes, and had had, moreover, a bad sore mouth, and a nasal catarrh, from which she was still suffering.

She did not walk or talk until she was nearly four years old; but is not now deficient in intellect. She had nodes upon her tibiae, and was subject to rheumatism. Deciduous teeth decayed early and extensively; lower permanent teeth small, but well formed; upper ones had all obtained their full growth, except the right central incisor, which was just through the gum, although its fellow had long since preceded it. It was somewhat narrowed below, and decidedly notched. Other superior incisors, though unsymmetrical, dwarfed, and somewhat peg-shaped, presented no notches. The treatment was that adopted in most of the foregoing cases. A combination of hydrarg. bichlorid. and syr. sarsaparil. was ordered to be taken three times a day, and atropia to be dropped into the affected eye.

Jan. 31. Left eye decidedly better; redness and photophobia less, cornea much clearer. She can read with it Jaeger No. 15. The right eye began to grow weak six days since, and now presents some conjunctival redness, with slight photophobia, and interstitial cloudiness of cornea. Can only read Jaeger No. 12 with this eye. To continue internal remedies and apply atropia to both eyes.

Feb. 15. Left eye almost free from redness, cornea clearing. Inflammation in right eye increased; cornea presents a reddish tinge, is completely opaque, and has lost its brilliancy, the epithelium being rough and granular. Pupil and iris invisible, and has only perception of light. Dropped 4 gr. sol. of atropia into right eye.

March 8. Left eye improving. Right no better, cornea quite red from the development of new vessels, and at one or two points upon its periphery, where these are most numerous, it has this appearance, as though the edge of the cornea had been painted with brownish-red paint, etc. Ordered four powders, containing each—hydrarg. chlorid. mit. gr. j; pulv. scammonii gr. ij, pulv. rad. rhei gr. iv. To take one, at bedtime, twice a week, and continue other remedies.

22d. Left eye better; pupil widely dilated by atropia. Right eye greatly improved; redness and photophobia less; cornea much clearer. Can now see the iris and pupil by oblique illumination; and find that the iris, as well as the cornea, has been invaded by the disease. The iris tissue is swollen, and infiltrated with lymph; and the pupil, which has been but little dilated by the atropia, and presents an irregular form, is occluded by a layer of the same. Ordered one or two drops of a sol. of atropia, gr. viij to 3j, to be dropped into right eye once a day.

April 9. Left eye free from inflammation, the cornea sufficiently clear to allow patient to read Jaeger No. 5. Vascularity of the cornea of right eyes has disappeared, subconjunctival congestion much less. The pupil, though very irregular, the margin of the iris being bound at several points, by tags of adhesion, to the anterior capsule of the lens, is slowly yielding to the atropia and its occlusion is less complete. She can distinguish with this eye several letters of Jaeger No. 21.

30th. Right eye steadily improving; pupillary adhesions giving way; lens capsule and the cornea clearing, and the sight is correspondingly improved, so that she can now read with it Jaeger No. 14.

She is still under treatment.

CASE VIII. *Recurrent interstitial keratitis in one eye—nebulous opacities in the other, from a former attack.*—A negro woman, aged about 25, came to Eye and Ear Dispensary, Feb. 7th, 1873. Right eye had been inflamed for several weeks; interstitial opacity of cornea so

great that iris could not be distinguished; redness and photophobia not very marked. T n. The left eye free from inflammation, but the slight nebulous opacities, to be seen in the cornea, gave evidence of former keratitis. The patient stated that both eyes had been affected before. The character of the teeth was not recorded. Ordered four powders, containing each hydrarg. chlorid. mit. gr. ij, pulv. scammonii gr. ij., pulv. rad. rhei gr. v. One to be taken every other night. Atropia to be instilled into right eye three times a day.

Feb. 14. Photophobia less. Appearance of eye unchanged. Ordered a combination of bichloride of mercury and syr. sarsaparillæ, to be taken three times a day. Continue atropia.

March 7. Eye greatly improved; redness almost entirely gone; cornea much clearer. Can now see iris and pupil distinctly. She is to take a second bottle of the syrup and bichloride, and use atropia night and morning. She has not reported since.

Two other cases came under my observation, but, as their histories are imperfect, we shall not relate them.

The foregoing cases are principally of interest, in so far as they afford additional evidence in favour of the propriety of considering interstitial keratitis as a distinct form of ophthalmia, occurring in the subjects of inherited syphilis. Let us see then to what extent they accomplish this.

In Cases I. and II. syphilis was known to have existed in the patients' parents. In the former I had the testimony of the physician, who had recently attended the father for tertiary syphilis, and in the latter, the confirmatory statement of both father and mother, that the mother had been inoculated with syphilis, previous to the birth of the patient. The subject of Case I., moreover, presented the characteristic teeth and physiognomy, had a history of infantile syphilis, and was, in accordance with the rule, the eldest child of the family. Besides the typical teeth, which were present in the subject of Case II., there was the usual family history of syphilis. First, after the inoculation, a miscarriage, the child being dead at birth and covered with a rash; then a child, born at full term, puny and delicate, also exhibiting a rash, and dying in infancy; and next, the patient having a rash in infancy, ozæna in childhood, and then keratitis. In both cases, after other remedies had failed, a specific treatment was followed by good results.

In Case III. the teeth were suspicious, though not typical; the family history strongly confirmatory, and a specific course of treatment very effectual.

In Cases IV. and V., where the appearance of the eyes, in two sisters, indicated former keratitis, the fact that they were the eldest of the family, and the only ones who had suffered with the disease, that the affection had been much more severe in the elder of the two, and that she moreover presented the characteristic physiognomy in a striking degree, and suspicious teeth, all pointed strongly to the probable influence of a specific cause. In Case VI. the teeth were typical; the physiognomy characteristic,

the bones of the nose having been destroyed by disease in infancy; and, in connection with these, the family history so confirmatory, that the fact of the patient having been the subject of inherited syphilis is placed almost beyond a doubt. In Case VII. the evidence is equally conclusive. The subject of it presented the characteristic physiognomy and teeth; had a clear history of infantile syphilis; a family history strongly corroborative; and the disease improved satisfactorily upon a specific treatment. In Case VIII. the character of the teeth, and the history of the patient, were not recorded. The strongest proof of the syphilitic nature of the affection being the prompt manner in which it yielded to specific treatment.

Of the eight cases, the evidence in favour of the syphilitic character of the disease, may be considered conclusive in four; in all the others, except, perhaps, Case VIII., it is so convincing, as to render such a view of their nature more than probable. In view of what has been said in regard to the "peculiarity of distribution" of this disease, as well as of the notched and pegged teeth, which, as we have seen, are usually associated with it, Cases II. and VIII. (the subject of the former being a mulatto, and of the latter a negro) become of more than usual interest. I am not aware that any cases of interstitial keratitis, occurring in negroes, have been heretofore published, but I have lately heard of two other well-authenticated cases having been recently met with by a physician in this city; so that it would seem probable that it is not more uncommon among the negroes, in this country, than among the whites.

So far as it is permissible to draw general conclusions from an experience extending over comparatively so short a period, I should be inclined to consider that this form of ophthalmia is quite as prevalent, and is as generally accompanied by the notched and pegged teeth, in this country, as in England. In regard to its prevalence in England, Mr. Hutchinson remarks, "to those whose field of observation does not include an ophthalmic hospital, it is a very rare disease. As some gauge of its infrequency, I may mention that at the Metropolitan Free Hospital, where the average daily admission of new surgical cases is between twenty and thirty, I have not had to treat more than one case a year."¹

At Moorfields, however, where Mr. Hutchinson is perhaps accorded by his fellow surgeons a larger share of these cases than would otherwise fall to his lot, I should think those coming under his care would average nearly one a week. By reference to my case books, I find that those which I have met with, represent between 3 and 4 per cent., or about one in thirty, of the various affections of the eye which I have had occasion to treat during the past and present year. That this, however, is an accidentally large average, I am inclined to believe.

It is worthy of remark, that, although, during this time, many cases of

¹ Op. cit., page 27.

scrofulous or phlyctenular corneitis occurring in children of German parentage have been encountered, I have not yet met with a single case of interstitial keratitis under such circumstances. On the contrary, the subjects of the latter disease, if I mistake not, were, invariably, the children of American-born parents.

In regard to the treatment of this affection, I need only say, that the administration of specific remedies for the purpose of correcting the constitutional taint is by far the most important part of it. The combination of hydrarg. bichlorid. and syr. sarsaparillæ, which I have generally used, has in my hands proved more effectual than mercury given alone. The efficacy of the famous French preparation, sirop de cuisinier, is due probably in great part to the presence of these two ingredients; but as the hydrarg. bichlorid. is said to be in time decomposed into calomel by the syr. sarsaparillæ, it is better that the bichloride in solution should be mixed with the syrup just before being administered. The iodide of potassium may perhaps be advantageously alternated with this combination. Whenever photophobia exists, as it almost always does during the earlier stages, the use of atropia, from one to two grains to the ounce of water, is indicated. And when the inflammation is intense, as shown by excessive subconjunctival injection, and vascular development in the cornea, we shall do well to use, with more caution, a much stronger solution, say from four to eight grains to the ounce; as we shall thereby diminish the chances of adhesions being formed between the iris and lens capsule, and of the pupil becoming occluded; results which may follow the supervention of iritis, which the opaque condition of the cornea prevents us from observing.

BALTIMORE, April, 1873.

ART. VIII.—*Simulated Amaurosis*. By GEORGE C. HARLAN, M.D.,
Surgeon to Wills (Ophthalmic) Hospital, Philadelphia.

Two years ago a girl eleven years of age, apparently in excellent health, was brought to me by her parents with the statement that they had recently discovered her left eye to be quite blind. She had been sent to the family physician, a homœopath, on account of a slight conjunctivitis, and, as the result of the consultation, had returned with this startling announcement. She denied even perception of light in that eye.

Never having met with a similar case, I failed to detect, or even suspect, the deception, but as a careful ophthalmoscopic examination revealed no lesion or imperfection of the organ, I assured the girl's parents that there was no present disease there and no indication for treatment. The other eye was found to be perfect in all respects, and I advised them to return her to school and pay no attention to the blind eye while the sight of the other remained unimpaired.

A few weeks since, she was again brought to my office complaining that the other eye was failing, the left still continuing stone blind. She said that the print looked blurred when she attempted to read, and her parents had noticed that she held the book nearer to the eye than usual.

She admitted a vision of $= \frac{20}{L}$ and with a $-\frac{1}{18}$ glass acknowledged to $\frac{20}{XL}$. A central limitation of the field of vision was very well counterfeited.

The result of a careful ophthalmoscopic examination was entirely negative. While I was engaged in recording her case, she amused herself by looking over the glasses in the trial case, and announced that the plain blue glass made a great improvement in her sight. This being the only discoverable indication for treatment, I ordered blue glasses. Not finding the large coquilles, with which the optician furnished her, becoming, she, at the next visit, denied that they were of any use. When directed to look at a distant gas-light through a prism, with its base upwards, held before the right eye, she at once acknowledged the double images, but when the attempt was made to separate the images by means of a coloured glass, her suspicions seemed to be aroused, and her answers were negative. When required to read the test letters at varying distances there were evident discrepancies in her answers.

The pretended amblyopia of the right eye precluded the use of any of the tests based upon the reading of ordinary type, and confined me to the large letters which she had acknowledged being able to recognize. I, therefore, placed the trial frames before her eyes with a plain glass in the left side and a convex one of ten inches focal distance in the right. The latter, without exciting her suspicion, excluded the right eye from any distinct vision beyond the focus of the glass. She still read No. L at twenty feet. Then having first substituted for the test card another with a different series of letters, I placed an opaque disk in front of the plain glass, and she could not make out a letter. This proved, at least, that she had been reading No. L at twenty feet with the eye that she pretended was not conscious even of the bright glare from the ophthalmoscopic mirror, and was quite enough to throw a degree of doubt, almost amounting to certainty, on all her statements.

She did not appear again, but her father called on me some days afterwards and reported that she had come home in a very bad humour, indignantly accusing me of having treated her with great injustice, but, the next day, had made admissions, which, though partial and constrained, were sufficient to convince him fully of the correctness of my view of her case.

The second case was seen in consultation with Dr. Goodman, and has been reported in the *Philadelphia Med. Times* for August 15, 1872.

A rather delicate looking boy, æt. 11, was represented to have become blind in the right eye about eighteen months before. After the disease had resisted the skill of the family physician for some months, the patient's father was recommended by his friends to "try electricity," and took him to a "professor" of that science. The result of one application was an entire restoration of vision. The cure lasted, however, only a few weeks, when the remedy was resorted to again with the same result as before. After this history had repeated itself a number of times, the father, as a measure of economy, invested in an apparatus of his own, and wound up his son's vision as often as it ran down.

When brought to us, the boy asserted that the eye was not conscious of the ophthalmoscopic examination, which, however, revealed nothing to account for the loss of sight. When a prism was placed before the left eye, he admitted

seeing two images of the gas jet which could easily be distinguished by a coloured glass, or made to unite by a corrective squint, when the base of the prism was held outwards. He was required to read with the prism still before the eye, and while he was disconcerted and thrown off his guard by being urged to read rapidly, a fold of paper was slipped in front of the left eye, and he continued to read with the right.

The father was quite sure that there was no motive for the deception. The fact that the boy's mother was blind of the right eye was a singular coincidence and perhaps had a psychological bearing on the case.

Though this form of deception has been occasionally met with among the strange vagaries of hysterical women, and has often been resorted to by men with some object in view, it is extremely uncommon in boys. I know of but one other case. It is reported by Galezowski in his recent work on diseases of the eye.

The patient, or rather culprit, was a boy of eleven years, and Galezowski considered it a plain case of malingering to avoid school. In this the young scamp was quite successful for a length of time, until he was finally brought to Paris for treatment, and exposed by the prism test.

In the notes of a third case I am indebted to Prof. D. H. Agnew.

"Miss M., æt. 18 years, had always enjoyed excellent health. One year before my visit she was thrown from a horse. A short time after this accident, a deep-seated soreness was experienced in the right iliac region. Five months afterwards a marked swelling made its appearance in the same locality, which disabled her from taking exercise and very soon confined her to bed. At the time of my visit, I found a conical enlargement, hard, sensitive, not movable, and quite the size of the closed hand. The patient was somewhat pale, passed restless nights, with febrile disturbance towards evening, but no chills. The menstrual discharge was regular, only somewhat profuse, and attended by pain for the first day or two. A vaginal examination revealed an undue fulness on the right wall of the canal, high up at its insertion on the uterus. Her appetite was capricious and her mental state somewhat despressed, though by no means despondent.

"I diagnosed a periuterine abscess, depending, doubtless, upon a cellulitis set up by the violent concussion to which the pelvic viscera had been subjected by the fall.

"After the lapse of about four months the abscess opened into the vagina, the external swelling subsided, and finally the discharge disappeared and the patient was apparently well. About this time a tooth which gave her a great deal of pain was extracted by her dentist while she was under the influence of chloroform administered by myself. She recovered quietly and fully from the anæsthetic and without any succeeding excitement whatever; in fact, her whole deportment, both before and after its exhibition, was cool and composed. The patient was now able to walk out, and was recovering her strength rapidly under a course of tonic treatment.

"Some weeks after this I was summoned to see her again. She had, in the course of a night, become entirely blind. Nothing had occurred the previous day to disturb either her mental or physical state. I watched her behaviour very narrowly, and certainly every movement betokened a freedom from all attempts at acting a part; and indeed, the uniform courage with which she had endured her protracted suffering, her strong common sense, and pure character, all conspired to convince me that there was no dissimulation in the case.

"The pupil responded promptly and naturally to light, the external appearance of the eyes was normal, and an ophthalmoscopic examination failed to detect any morbid change.

"Believing the case to be one of hysterical blindness, I so stated to her friends, predicting that her vision would be recovered—how soon I did not venture to affirm. She was advised to continue the tonic treatment and use the shower bath.

"For some time she was led by her sister, until her familiarity with the house became such that she could move without assistance. Often did I watch her, when entirely ignorant of my presence. With elevated head, open eyes, advanced and oscillating arms, the feet sliding along, would she thread her way about the room until the object which brought her in had been obtained. So convinced was I of the real nature of the delusion, if it may be so called, that I resorted to no test to detect simulated blindness.

"After she had been in this condition four weeks, the spell was dissolved as suddenly as it came; and her vision, which disappeared in a night, returned in a night."

No motive for deception could be discovered in any of these cases, and in the absence of other explanation, we are forced to fall back upon the term "hysterical," which is often another word for inexplicable, or they may be classed among the cases "which indubitably show that the simulation of disease has frequently been practised without the existence of any interested motive, indeed, without motive of any kind; that there is in short a species of moral insanity of which this simulation is the characteristic." This view seems to apply particularly to the case reported by Dr. Agnew, who had enjoyed unusual opportunities of becoming familiar with the previous character and disposition of his patient, and watched her with a great deal of care. Is it possible that she could have been psychologically blind—in a kind of visual trance—that the act of vision was carried as far as anatomy and physiology could take it, but the disordered mind refused to receive its impressions, and that she really could not or did not see? In the use of monocular optical instruments, we can easily, after a little practice, disregard and suppress the images on the retina of the eye not in use, and in strabismus when, to avoid diplopia, the images of one eye have been neglected, it becomes amblyopic without disease. Such facts show that it is possible for images correctly formed upon the retina not to result in vision, though the eye and nerve and brain may be healthy, and suggest the possibility of a mental suppression, as we often have a mental perversion, of vision. It is after all, not more mysterious that the mind should disregard the images of real objects than that it should conjure up images of objects that have no existence.

Perhaps it may, in some cases at least, be more scientific as well as more just, to consider "hysterical blindness" a real mental disease, rather than the mere whimsical counterfeiting of a symptom.

It is probable that cases of simulated blindness are more frequent than the space accorded to the subject in the text-books of ophthalmic surgery,

some of which do not even mention it, would lead us to suppose. Doubtless they might afford an explanation of a good many mysterious cases, and not a few wonderful cures.

Military surgeons have, from time to time, given a good deal of attention to the simulation of blindness, with an evident motive, by malingerers. Probably the art of malingering was developed to its highest perfection among the French soldiers, by the ruthless and sweeping conscription of the First Empire, when even Frenchmen began to feel that "la Gloire" was too dearly purchased, and Fallot says: "There is no disease more frequently pretended than amaurosis by those who desire to withdraw from military service, and it is almost always the right eye that is said to be affected." Though a good deal of ingenuity was devoted to the art of "old soldiering" during our late war, it does not seem to have taken this direction to any great extent. I can recall only one case, which was detected by Dr. Dyer, by means of the prism test, at the Satterlee Hospital, and reported by Drs. Keen, Mitchell, and Morehouse, in an article on malingering in the number of this Journal for October, 1864. It is not unlikely, however, that there may have been some cases of the kind among the fifteen hundred and twenty-two men reported on the sick list with "amaurosis," five hundred and fifty-six of whom were discharged. In the examination of a number of applicants for pension with alleged injury or disease of the eyes, I have not met with any case of feigned blindness, but several have attempted to take advantage of errors of refraction by attributing their defective vision to some disease or exposure encountered in the service.

A number of tests have been proposed for the detection of feigned blindness.

Gavin, in his work on *Feigned Diseases*, published in 1843, has a very interesting chapter on amaurosis. Though no one of the means of detection in use at that time was at all certain in itself, and few of them would be worth resorting to now, he shows that experienced surgeons managed to reach a much greater degree of precision than most of us would be likely to attain to if deprived of our test-types, ophthalmoscopes, prisms, stereoscopes, etc. The use of mydriatics seems to have been quite common among army malingerers. The story is told of a French conscript who had dilated his pupils widely with belladonna, and was so determined in his deception that when a sharp instrument was approached to the eye as if to be plunged through the cornea, neither head nor eye stirred, but the palpitation of his heart betrayed him.

When one pupil only is dilated, the use of belladonna may be detected by the refusal of the pupil to act in unison with that of the other eye, which it does almost invariably in true amaurosis. This, of course, presupposes the integrity of the third pair of nerves, for cases of mydriasis, from paralysis of the sphincter pupillæ, are frequently met with in which distant vision, at least, is unaffected. I have recently had under treatment

at the Wills Hospital three or four cases which presented no other symptom than mydriasis and paralysis of the accommodation, and which differed in no respect, except in persistence, from the action of atropia. It has been suggested, in cases of doubt, to puncture the anterior chamber and test the aqueous humour for the presence of atropia by applying it to a healthy eye.

Snellen's test types afford a simple and valuable means of detection when a diminution only, and not an entire absence of, vision is pretended. If No. XL., for instance, can be seen at ten feet, No. LXXX. should be seen at twenty feet and No. XX. at five feet. The great frequency of errors of refraction must, however, be taken into account. A myopic eye might very well be able to distinguish No. XX. at five feet and fail to read No. LXXX. at twenty feet, or the near vision of an hypermetropic eye might not correspond to the acuteness of its distant vision, while astigmatism would account for a much greater degree of amblyopia and a greater amount of seeming contradiction in the answers of the person examined.

For simulated monocular blindness, Graefe's prism test is a very convenient and useful one. If a prism, held before the eye in which sight is admitted, causes double vision, or, when its axis is held horizontally, a corrective squint, vision with both eyes is rendered certain. It must be remembered, however, that a useful degree of vision is not thus proved; it is only shown that the eye can see, but how much it can see must be determined by other tests. It should also be borne in mind that the failure to produce double images is not positive proof of monocular blindness, for it is possible that the person may see with either eye separately but not enjoy binocular vision, as in a case of squint, however slight.

A test recently suggested by Warlomont is so absurdly simple that it seems almost inconceivable that no one should have thought of it before, but it has proved conclusive, even as legal evidence. Displace the optic axis by slight pressure with the finger upon the eyeball, and show the suspected person two small dots on a piece of paper; if he says there are four, he is at once convicted.

Javal's test is almost equally simple. Cause the person to read while a ruler is held three or four inches from the face and directly in front of the nose, then close the blind eye, and, as part of the print will be concealed from the other one by the ruler, it will be easily shown that he has been seeing with both.

The stereoscope affords a very elegant means of detection. If the two fields are united, binocular vision is, of course, proved. We may even test each eye separately, independently of simultaneous vision by both, as recommended by Schweigger. (*N. Y. Med. Journal*, February, 1866.)

"If we draw in each separate field of vision that vertical line whose image goes through the centre of the retina, then, in the united stereo-

scopical field, not only both lines are seen as one, but every object situated on the right of one of these lines is projected to the right side of the field of vision and appears as if it were seen by the right eye. The same, of course, is the case with the left side. This gives the means of determining, in simulated monocular amblyopia, the acuteness of vision, and, if we choose, even the range of accommodation. For this purpose we arrange matters as follows: we have at the bottom of the stereoscope a sheet of paper marked only with the two lines above mentioned, now, if we have to deal, for instance, with an alleged amblyopia of the left eye, we place in the left field of the stereoscope, but to the right side of the vertical line, any object, say a piece of printed paper; with this exception, the whole of the bottom of the stereoscope is left blank. In the united stereoscopic field the paper will then appear as on the right side, and will make so strong an impression that it is seen with the right eye, that I doubt whether anybody can resist it. With a stereoscope which allows the convex lenses to be approached to, or withdrawn from, the bottom of the stereoscope, we can, if we choose, at the same time, ascertain the range of accommodation."

This plan has the advantage over that recommended by Laurence, by means of optical transposition of words upon the stereoscopic slide, in the fact that it renders us independent of binocular vision.

When blindness of one eye only is alleged, if the different tests are skillfully and perseveringly varied and combined, a very considerable knowledge of optics, more than is likely to be devoted to such a cause, would be required to escape conviction.

Fortunately the simulation of complete blindness of both eyes involves so many inconveniences that it is not often resorted to. No optical test can, of course, be applied to it. Patient waiting and careful watching will usually discover such a case. Dr. Hutchinson's success in speedily and permanently curing a case of deaf dumbness by means of etherization (*Am. Journ. Med. Sci.*, April, 1864) might suggest a trial of that means. As the effect of the anæsthetic passed off, the patient would probably recover the power of vision before his consciousness was sufficiently restored to enable him to resume the deception.

This plan was recommended in the article on malingering, referred to above, but I am not aware that it has ever been practised.

ART. IX.—*Poisoning by the Rhus Toxicodendron*. By SAMUEL C. BUSEY, M.D., one of the Physicians to the Children's Hospital, and Physician in charge of the Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C.

THE influence upon the human skin, of the poisonous principle of the *Rhus Toxicodendron*, has been long known and frequently discussed, but until the investigations of Prof. Maisch into the nature of the toxic principle, and of Prof. White into the clinical and pathological phenomena of the disease produced by it, but little had been known regarding these questions. These very elaborate investigations leave but little opportunity for original research, hence the record of my own experience and observations can prove interesting so far only as they may corroborate the conclusions of these distinguished gentlemen, or more definitely settle hitherto disputed points.

As it is my purpose to discuss the subject in its clinical and practical aspects, I omit any description of the well-known natural history and botanical character of the plant, and proceed with the detail of the cases, which will illustrate the peculiar characteristics of the disease.

CASE I.—In June, 1871, Mrs. V. suffered very severely from a burning and itching eruption covering her entire face, neck, both mammae, external genitals, extending along the inner surface of both thighs, both hands, wrists and portions of her abdomen. Her husband, at the same time, suffered with a similar eruption, though not so severe, on both hands, and an infant had it very slightly about the mouth and chin. A week previous to the appearance of the eruption, the husband and wife had passed an afternoon at a pic-nic, and he had fastened his horses to a bush covered with a vine, the character of which he had not observed. The wife did not approach the plant, and the child had been left at home. The disease ran its course, terminating in desquamation, without any benefit from treatment. Her suffering was so intense for several days that I was compelled to keep her under the influence of morphia.

On the 6th of May, 1872, the eruption again broke out, appearing simultaneously in all the localities attacked the previous year. It began with swelling, redness, intense burning, and itching. During the subsequent twenty-four hours, the inflamed surfaces became densely covered with very minute vesicles, which soon ruptured and poured out very copiously a yellowish serous fluid, which collecting in the most dependent parts desiccated into amber-coloured, semi-translucent incrustations. Saline purgatives and diaphoretics were given without any manifest effect. Applications of oxide of zinc, benzoated zinc ointment, glycerine alone and in combination with borax and camphor water, lotions of the acetate of lead, and various other sedative compositions were equally futile in mitigating the tormenting burning and itching, or in staying the progress of the disease, until finally, after two weeks' duration, relief was secured with a wash of glycerine, ʒiijss, solution of carbolic acid ʒss, which was applied to the entire inflamed surface, with a soft sponge. From the first application

the exudation, swelling and inflammation gradually diminished, though for a few seconds after the first application, the burning and itching were slightly augmented. Desiccation and desquamation soon took place, and the patient recovered entirely. No trace of disease remained to mark its localities.

On May 31st, 1873, the eruption made its appearance for the third time, the notes of which attack are as follows:—

May 31. Complaints of burning and itching on the right temple, extending to the outer canthus of the right eye, slight redness, but no swelling. Applied the benzoated zinc ointment.

June 1. Right eye entirely closed, swelling extended along forehead and to left cheek, partially closing left eye, also down right cheek to lip. Swollen surface inflamed, firm and inelastic; no pitting. The part first attacked covered with minute vesicles; exudation very copious and seems to irritate the inflamed surface. Burning and itching intense. No fever. Discontinued the ointment and ordered applications, with a camel's hair pencil, of the glyceratum amyli every few hours.

2d. Swelling about eyes slightly diminished. No extension of redness. Right cheek, brow, and right upper eyelid covered with vesicles. Exudation very copious; no burning or itching; no constitutional symptoms; slept well previous night; ordered entire inflamed surface to be thoroughly washed with soft soap, and then dressed, as before, with the glyceratum amyli. At my afternoon visit the swelling had extended down the right side of the face, under the right lower maxilla and chin, but had diminished about the right eye. Exudation very copious, no extension of inflamed surface; the extended swelling being natural in colour; ordered the washing with soft soap to be repeated, to be followed with free bathing of the entire tumefied surface with a solution of the bicarbonate of soda, and after drying of the surface, a reapplication of the glycerate.

3d. Swelling very much diminished; can open both eyes; exudation much less; some burning and itching around left eye, about which there is considerable tumefaction with inflamed surface, but no vesicles or exudation. The swelling about the jaw and chin remains normal in colour. The areas of redness and vesication have not extended; treatment continued.

4th. Swelling and inflammation considerably diminished.

5th. Tumefaction and inflammation diminishing very rapidly, none on lower part of face. Exudation less; none from some parts. On right cheek, which is but slightly swelled and less inflamed, are a few scattered milky-coloured pustules, much larger than the vesicles. Desiccation commenced in parts; she continued to improve rapidly and was soon entirely well.

CASE II.—Mr. O. C. G. was exposed to the poison on the 31st May. On the morning of the 2d of June discovered a blotch of redness with very slight swelling extending in a fan shape from the root of the nose towards the hairy scalp. In the afternoon the tumefaction had increased, and felt hot.

June 3. Face very much swollen and disfigured; both eyes closed; on the right temple a circular blotch of redness slightly elevated, itching and burning intensely; on the neck just above the middle of the right clavicle an oblong patch of similar character; on the afternoon of the same day the circular blotch was thickly covered with very minute vesicles, and vesication had commenced on other parts of the inflamed surface; no exudation; no constitutional symptoms; appetite good; ordered the parts to

be washed with soft soap, dried and then bathed with a solution of the bicarbonate of soda, and subsequently protected with the glyceratum amyli.

4th. Exudation quite free, but not copious; no extension of tumefaction or inflammation, slight burning at some points but no itching; treatment continued.

5th. Improvement very marked; can open both eyes; no extension of inflammation, tumefaction, or vesication since commencement of treatment. Exudation greatly diminished; no burning or itching. Examination with a magnifying glass detects no vesicles, where not visible to the naked eye. The patches of vesication present a milky whitish appearance, and under the magnifying glass the vesicles seem collapsed, presenting closely aggregated curdy whitish points. Small patches of vesication on the dorsum of right hand, and dorsal aspect of several fingers exhibit vesicles much larger than any which have appeared on the face. They are limpid at their apices. The fluid, when discharged by puncture, is limpid and transparent, changes blue litmus paper to a deep blue, which fades after drying, leaving no trace of discoloration. Suspended the glycerate.

6th. Swelling and inflammation subsiding rapidly; desiccation established; desquamation commenced on the 7th, and was completed on the 10th.

CASE III.—In the spring of 1865 I attended a lady who, a few days after exposure to the poison, suffered with swelling and inflammation of her right cheek, attended with intense burning and itching. The inflamed surface was covered with large blisters, containing a yellowish serous fluid. In the succeeding spring she was seized with a precisely similar attack, without being able to trace it to any renewed exposure to the poisonous plant.

The perfect insusceptibility of some individuals and peculiar susceptibility of others is very remarkable. One may require the direct application of the expressed juice or of the distillate to produce its local effects. Another will resist the toxic action however applied. A third will suffer to an intense degree from simply going in the vicinity of the growing plant, and, occasionally, persons are so easily affected that the smoke of the burning plant will poison them. Prof. Maisch¹ mentions the fact that several persons who entered his laboratory while he was engaged in his experiments, "were more or less poisoned by the vapours diffused in the room."

Another of its peculiarities is the readiness with which it can be conveyed to other parts of the body by the contact of the part which may have received the poison from the plant, and from one individual to another, even though the first may not, or very slightly, suffer from its poisonous action. The cases of the wife, husband, and child, before recorded, fully illustrate this characteristic. The wife's face may have received the poison direct from the plant, though she denied having been near it; but it is impossible that the parts of her body under the clothing,

¹ Am. Journal of Pharmacy, vol. xxxv. p. 10.

and the child, could have been thus affected. As her hands and wrists were poisoned, it is possible that she conveyed it to the other parts; but it seems more probable that it was conveyed by the hands of her husband. I have several times treated cases illustrating this peculiarity. Two years ago a gentleman residing in the suburbs of the city suffered from the characteristic eruption on his hands and genitals. His story was, that after handling the plant, and previous to washing his hands, he had poisoned his penis and scrotum. The appearance of patches of eruption, in the case of Mr. O. C. G., below the collar, is, also, evidence of its conveyance. Prof. Maisch¹ says he "has transferred the poisonous effects to some other persons by shaking hands with them," and Prof. White² reports the case of a child six years old, who contracted the disease from a servant boy (himself not susceptible), whose hands came in contact with the child several hours after having been engaged "in pulling up some of the plants," and had been thoroughly washed "with hot water and soap, and afterwards with vinegar."

Sometimes I have thought the disease was extended by permitting the exudation to flow upon healthy parts, but more careful observation has satisfied me of its innocuousness, at least when applied to a healthy skin, though it is possible the area of erythema may be extended over surface already tumefied. Prof. White and Dr. Pierson failed to produce the disease by inoculation. The exudation, whether from a recently punctured vesicle, or from the surface, will deepen the colour of blue litmus paper, but the changed colour disappears with drying.

Profs. Maisch and Proctor think the morbid phenomena speedily succeed the application of the poison; the former asserts that while operating with it "a copious eruption and the formation of vesicles" occurred on parts exposed to the plants. Griffith says the symptoms are manifest within a few hours after exposure; others concede that several days may elapse. I am convinced that in many cases a week will pass before the appearance of the local symptoms, and the cases are very rare where any morbid condition is apparent within 48 hours. This difference may be due either to the varying susceptibilities or degree of concentration of the toxic agent.

In many cases the disease will run its course in a week, but occasionally it will continue through a month. Griffith³ says the eruption may continue a long time; one "set of vesications succeeding another, so as to protract the disease for an indefinite time." And Prof. White thinks it usually lasts from ten to fourteen days.

Griffith very correctly describes the symptoms as "violent itching, redness, and tumefaction of the parts, especially of the face, succeeded by heat,

¹ Am. Journal of Pharmacy, vol. xxxviii., p. 10.

² N. Y. Medical Journal, March, 1873. ³ Griffith's Medical Botany, p. 185.

pain, vesication, and fever." I do not think the last is often present, except in cases where there is considerable surface involved.

The vesiculation is always uniform in the same person. Generally is in circumscribed patches of closely aggregated minute vesicles, sometimes covering only small portions of the inflamed and tumefied surface. Occasionally the vesicles are very large, looking like blisters.

Prior to the investigations of Prof. White this affection was almost universally regarded as an erysipelatous inflammation. He insists that the "tissue-changes are always of an eczematous, never of an erysipelatous nature." It has seemed to me to present a combination of some of the symptoms of acute eczema and of erysipelas. The character of the eruption, enormous tumefaction, extent of inflammation, degree of infiltration, copiousness of the exudation, proneness to and rapidity of extension beyond the precise limits to which the poison may be applied, and the absence of any marked constitutional symptoms seem to impart to it an individuality.

To a practised eye the diagnosis is not difficult. Particular attention to the essential characteristics, sufficiently set forth in the clinical histories of the cases reported, and to the history of the case, will enable any one to differentiate it from either eczema or erysipelas.

I have witnessed none of its sequelæ, other than the annual recurrences of the characteristic eruption. Cases of acne, chronic eczema, and other chronic cutaneous diseases have been ascribed to the Rhus poison. Long continued and indolent ulcers have also been traced to the same cause, but with the exception of a single case, where slight superficial ulcers marked the localities of several large blebs, and which left, after healing, white spots, I have witnessed nothing of the kind.

Prof. White failed to find a single recorded case of the poisonous action of the Rhus upon the lower animals. Stillé, however, at page 683, vol. 1., *Therapeutics and Materia Medica*, refers to several cases where dogs were fatally poisoned by its internal administration, and one by exposure to the poisonous emanations.

When taken internally its action is that of an acro-narcotic. Introduced in 1788 by Dr. Fresnoi, as a remedy in chronic cutaneous diseases, it has been frequently employed since with varying success in the treatment of certain nervous affections, but seems to have gone entirely out of use.

Dr. Stokes¹ reports three cases of rhus poisoning from drinking the tea made of the root, in one of which the characteristic eruption appeared upon the skin. Dr. Moorman² also reports two cases, poisoned by eating the berries. In the Report on Botany, vol. 5, p. 755, *Transactions of the Amer. Med. Assoc.*, the case of Mr. Wilkes, a medical student, is referred to. To test the toxic effects of the Rhus, he took after supper a gill of the strong decoction of the leaves and vine. He was much swollen

¹ Medical and Surgical Reporter, 1867, p. 373.

² American Journal of Medical Sciences, April, 1866, p. 560.

the next morning, and continued to swell until relieved by a wash composed of the bichloride of mercury and hydrochlorate of ammonia. All these cases recovered.

All the cases of Rhus poisoning which I have seen occurred during the spring or summer or autumn months, most usually in the spring. It is maintained, however, that the bark and wood contain the poisonous quality, which it will impart at any season of the year, and that persons may be poisoned by the exhalations into the room while the wood is burning in the fire.

Treatment.—Several indigenous plants have been highly extolled as specifics for the disease. Dr. Stokes¹ claims to have frequently cured cases with one or more applications of the juice or sap of the *Urtica pumila*, commonly known as the bastard nettle; and Dr. Canfield² asserts he has invariably succeeded with the local application of the balsam-like juice of the *Grindelia hirsutula* and *robusta*, a perennial found in California. The *Rhamnus oleifolius* has also been recommended. Dr. Livezey³ has obtained satisfactory results from the tincture of lobelia, and Dr. Risk⁴ has never failed with the decoction of white-oak bark. Dr. Dunn⁵ has had equal success with the decoction of the leaves of the cotton-wood. Prof. White refers to the supposed special power of a decoction of serpentaria, and Dr. Clark⁶ has found an infusion of coffee beneficial. Many other remedies have been used, but their claims to confidence are very slight.

Since the discovery by Prof. Maisch that the toxic quality was due to an acid, which he denominated toxicodendric acid, the treatment has been based upon a true scientific basis. Previously it was entirely experimental, and many curious formulæ have been suggested as infallible cures. It is curious to observe how gradually and truly domestic empiricism approached the correct principles of treatment, for, long before the investigations of Prof. Maisch, or even of Khittle, who claimed that the poisonous agent was a volatile alkaloid, ammonia, soda, potash, sugar of lead, soft-soap, and common salt had been extensively employed as domestic remedies.

The very decided curative properties of the alkalies are well exemplified in the cases of Mrs. V. and Mr. O. C. G. In both cases the duration of the disease was cut short, more markedly so in the latter case. The pathological phenomena were arrested at that stage and confined to the precise limits which they had reached at the time of the first application. In the case of Mrs. V. the swelling extended after the first washing with soft-soap, but was unaccompanied with any inflammation.

¹ Medical and Surgical Reporter, vol. xxx. p. 542.

² American Journal of Pharmacy, vol. xxxii. p. 414.

³ Boston Medical and Surgical Journal, vol. l. p. 262.

⁴ Cincinnati Medical Repertory, July, 1871.

⁵ Medical and Surgical Reporter, vol. xxiv. p. 195.

⁶ Boston Medical and Surgical Journal, vol. liii. p. 163.

There appears to be some other element of disease besides the mere local toxic effect of the acid, or how account for the extension beyond the limits of the direct application of the poison? It extends by continuity, and the alkalies seem to possess an equally satisfactory influence in arresting the morbid condition in such parts. The cases reported by Dr. Stokes and the case of Mr. Wilkes would seem to suggest the conclusion that it will produce its local cutaneous effects through absorption into the blood.

Glycerine will sometimes relieve the burning and itching. Its influence is, however, simply palliative. The glyceratum amyli relieves the intense local suffering, and affords sufficient protection to the inflamed surface without obstructing the view of the parts.

The beneficial results, ascribed by several writers to cold lotions of sugar of lead, are, I think, due entirely to its cooling and perhaps astringent properties. With me it has not yielded any direct curative results. Prof. White, however, claims that it precipitates with the toxodendric acid "an inoffensive, harmless salt."

I have only treated the disease during its acute stage, and hence cannot determine the value of the alkalies and other suggested remedies in the treatment of the chronic form. The first and second attacks of Mrs. V. ran their course, unless the second was arrested by the application of glycerine and carbolic acid. Washes of the mild and corrosive chloride of mercury have seemed to afford the surest hopes of success when the alkalies have failed.

I have found but two fatal cases recorded.

ART. X.—*Case of Erysipelas followed by Puerperal Peritonitis.* By
J. B. CRAWFORD, M.D., of Wilkes-Barre, Pa.

THE question whether puerperal peritonitis is related to, and dependent upon, the virus which engenders erysipelas has elicited much discussion among practitioners of midwifery as well as among pathological writers; and although much, and convincing, evidence has been adduced in confirmation of the supposed relationship, its existence can hardly as yet be regarded as a settled pathological fact. As a contribution to the evidence in favour of the identity of origin of the two diseases, I will relate a case which recently occurred in my own practice.

Mrs. O——, aged about twenty eight years, received a slight wound on the forefinger of the left hand from a butcher-knife, while engaged in some domestic duty. On the following day a peculiar redness was noticed about the seat of the wound, attended with considerable swelling and much pain. Slight chills, with flushes of heat, supervened. These symp-

toms increasing in severity for three or four days, I was called to see her on Tuesday, April 15. Severe erysipelatous inflammation extended over the fingers, hand, and forearm. The finger on which the wound had been received presented a dark, livid appearance, evidently bordering on gangrene. This was probably due to the finger having been tightly bandaged at the seat of the wound for the first twenty-four hours, for the purpose of preventing hemorrhage. An abscess had formed, near the metacarpophalangeal joint, which was opened, giving exit to a considerable amount of pus, and affording marked relief to the patient. I ordered a poultice to be applied to the finger, iodine and acetate of lead to the hand and forearm, and quinia in full doses to be administered.

Erysipelas was at that time epidemic in the neighbourhood in which Mrs. O. resided. Malarial fever had also been rife there for a long time. Numerous pools of stagnant water, the receptacles of all the refuse materials of the neighbourhood, were situated in that locality.

I was informed by Mrs. O., that she had for some days expected her confinement, and wished to engage my services for that occasion. To this I assented, but with many and serious misgivings as to the result of her case. I warned my patient of the danger of any contact of the hands with the genital organs, and directed that the utmost care be taken to avoid such contact, and to obviate, so far as possible, any other medium of contagion. On the following day I found the patient with symptoms but slightly relieved. The abscess was discharging freely, the swelling of the hand and arm had diminished but little, the pulse continued at about 108 per minute, and the temperature, now for the first time noted, stood at 101° F. *No abdominal tenderness could at that time be detected.*

On the following morning, April 17, I was called to Mrs. O. and found her in labour. Slight pains had begun some three or four hours previously, when she noticed for the first time a decided tenderness over the abdomen. After a short and not unusually painful labour she was delivered of a large, healthy child. I noticed, on my arrival this morning, a marked subsidence of the erysipelatous symptoms about the hand and arm. The distal extremity of the finger was decidedly gangrenous, and a plain line of demarcation had formed around the finger at the seat of the wound.

At the close of labour the abdomen was exceedingly sensitive to the touch over its entire extent. So decided, at this time, was the peritoneal tenderness that the patient was unable to extend the lower limbs. Even the pressure of the bedclothes was complained of; the temperature was now 104° and the pulse 115 per minute; morphia in full doses was ordered in addition to the previous remedies.

On the following day, the inflammation of the hand and arm had almost disappeared. The patient complained less of abdominal tenderness (due, probably, to the morphia), had slept for several hours; slight lochial discharge continued, the temperature remained nearly the same as on the previous day and the pulse had increased to 120 per minute.

On the 19th, I found the pulse had risen to 130 per minute, and the temperature had advanced to 106°; slight delirium was noticed: otherwise little apparent change since previous day.

On the 20th a marked increase of all the previously noted abdominal symptoms was apparent. The pulse had increased to 150 per minute, and the temperature had risen to 108°, no secretion of milk had taken place, and the lochial discharge had disappeared.

On the 21st, the patient continued nearly the same as on previous day, showing, however, an increase of delirium and a diminution of vital power. The pulse and temperature continued at their former height, although the patient was bathed in a profuse perspiration.

On the morning of the 22d, I found her rapidly sinking—the pulse feeble and rapid—delirium, tending to stupor,—marked tympanites and a diminished temperature (103°) were the principal features noted. She died about noon; no autopsy was allowed. The child, when last heard from, remained well.

Although births were quite numerous in our city at about that time, I am not aware that any other case of puerperal peritonitis has recently occurred. I attended two other cases of childbirth during the time of attendance on Mrs. O. Both did well. I used extreme caution, however, in regard to the possible conveyance of the disease—making free use of carbolic acid, and even changing the clothes which I had worn on visiting my first patient before visiting the others.

It will be observed that a sudden recession of erysipelatous inflammation of the hand and arm, and as sudden a development of inflammation in the peritoneum, were synchronous events. Was not this a transposition or metastasis of erysipelas from the former to the latter organ? Whether it was really this, or whether the virus of erysipelas was conveyed to the abdominal cavity through the medium of the genital organs, it would be difficult in this case to determine with absolute certainty. The utmost caution, however, was taken to prevent the possibility of such conveyance of the virus. It is to be noted, too, that peritoneal inflammation was already developed at the beginning of labour. I could detect no evidence of inflammation of the uterus during labour. Its contractions, its sensibility, and its secretions at that time all seemed normal. As the lochial discharge occurred during the first twenty-four hours or more after delivery, and then ceased, it would seem as if the morbid action had extended from the peritoneum to the uterus, instead of taking the opposite course.

It is well known that a sudden recession of erysipelas of the face is occasionally followed by an equally sudden inflammation of the meninges of the brain or of the mucous lining of the air passages; thus proving that in the erratic shiftings of that disease it may fix alike upon the dermal, the mucous, or the serous tissues.

In view of all the facts of this case, I cannot resist the conclusion that the disease of which Mrs. O. died was a transposition of erysipelatous inflammation from the hand and arm to the abdominal cavity.

REVIEWS.

ART. XI.—*The Report of Columbia Hospital for Women and Lying-in Asylum, Washington, D. C.* By J. HARRY THOMPSON, A. M., M. D., Surgeon-in-Chief. With an Appendix. 4to. pp. 430. Washington: Government Printing-Office, 1873.

SINCE the close of our late war we have become accustomed to receive official medical publications from Washington. These are always welcome because the labours of Drs. Otis, Woodward, and Billings, of the Surgeon-General's Office, are acknowledged to add lustre to American medical literature. These officers are engaged in the National service, have devoted themselves to analyzing and drawing the deductions from observations made during the late unhappy contest, and it is proper that the results of their labours should be published by the Government and distributed as widely as possible among American medical men. Indeed it is a demand which science may legitimately make for the terrible and wanton sacrifice of human life upon many a bloody battle-field.

Before us is another candidate for professional favour from the city of Washington. It is the report of the Columbia Hospital, an institution of which we confess we knew nothing till this book was placed upon our table. It has been favoured by official patronage, and under the auspices of the Secretary of the Interior its report has been published and sent gratuitously to gynæcologists throughout the land. We are not told what claim the institution has upon the general Government, that our pliant Congressmen should have appropriated funds from the public treasury for its maintenance and the publication of its report in so costly a manner, and it would be of no little interest to learn what influences were brought to bear upon Congress to cause it to set apart a portion of the money in the nation's vaults for a hospital for lying-in women and for the relief of diseases peculiar to her sex. The gallantry of Congressmen has undoubtedly got the better of their judgment in this instance, and, no matter how laudable the object may be from a private point of view, the people have a just right to complain at this misuse of the public funds. Hospitals, because they are located in Washington, have no more right to Congressional support than those of Philadelphia, New York, Chicago, San Francisco, or New Orleans. If the principle which has operated in the present case is carried out in this age when so many worthy institutions are seeking aid, the national treasury will be rapidly depleted. But since this hospital is supported by, and its report published at the expense of, the public funds, and published in a style similar to that of the able circulars issued from the Surgeon-General's Office, the American professional public are naturally led to expect a production of more than ordinary merit.

The first part of the report, that pertaining to the *in* department of the Columbia Hospital, appears to have been written by Dr. J. H. Thompson, the Surgeon-in-Chief. It opens with an article on the operation for the cure

of ruptured perineum, giving the results of fifty-three cases, all of which were successful. So far as the paper is concerned, no new principles are inculcated, and Dr. Thompson's method of operating is essentially that of the late Mr. Baker Brown, of London. He, however, departs from the teachings of his master in the management of the sphincter ani, which he does not divide, "unless it has been torn through anteriorly." On the contrary, he adopts the plan of Van Buren, of New York, and paralyzes the muscle by introducing the thumbs into the anus and stretching it thoroughly. Instead of using pieces of bougie for quills, as directed by Mr. Brown, Dr. Thompson employs hard rubber tubes, perforated at intervals for the reception of the wires. These are minor changes, and it is not worth while to discuss their merits; but it is questionable whether this plan is preferable to the simpler one recommended by Dr. Agnew (*Pennsylvania Hosp. Reps.*, 1868, vol. i. p. 36), with whose papers the author does not seem to be familiar.

Dr. Thompson coaptates the parts by tightening the middle suture first and afterwards those towards the anus; lastly, those next the fourchette. Prof. Agnew, whose important papers on this subject leave little more to be desired, insists (*American Supplement to Obstetrical Journal of Great Britain and Ireland*, June, 1873, p. 33) upon the importance of tightening the anal suture first and approximating the parts from behind forwards.

In relation to after-treatment, Dr. Thompson differs from many surgeons of the present day in eschewing the use of opium to keep the bowels constipated. On the contrary, he keeps the discharges soft and secures a passage every day. Several years have passed since the writer began to question the propriety of administering opium after operations on the female genital organs, and a remark of Mr. Spencer Wells (*Diseases of the Ovaries*, London, 1865, p. 31) in relation to its use in cases of ovariectomy confirmed this opinion. The writer believes that he has seen operations fail several times, because the opium given deranged the patient's digestion and induced a condition of system which was not favourable to the repair of local injuries.

In regard to the causes of rupture of the perineum Dr. Thompson adds nothing to our knowledge, nor does he give much prominence to any special cause. If importance is attached to any, it appears to be the forceps. As a hearty admirer of this instrument, we are glad to see that he has qualified what he has to say by employing the words, "unskilful use of the forceps." This is wise, for when properly applied, these prevent and do not cause rupture of the perineum. Properly used they give the accoucheur complete control of the descending head, and in the hands of a skilful operator, danger of injury to the perineum would be an indication for their application. Of much greater importance is "unusual width of the child's shoulders in proportion to the size of the head." Dr. Thompson would have done well to have laid stress upon this cause, which is dismissed with the words just quoted. Our own observation in hospital and in private practice has led to the conclusion that the integrity of the perineum is much more frequently destroyed during the birth of the shoulders than the head. This does not always depend upon "unusual width of the shoulders in proportion to the size of the head," but upon the inattention of the accoucheur, who, knowing the danger, has carefully watched the painful throes attending the birth of the head, and who, as is not unnatural, has relaxed his watchfulness during the few suc-

ceeding moments, in consequence of which, he is surprised by a sudden uterine contraction which drives the body into the world before the shoulders have rotated properly. The danger at this stage of labour might have been more strongly insisted upon, especially as it is by no means so generally recognized as that attending the birth of the head.

The reports of the thirty-four cases of rupture that follow are fairly well written, but on the whole the paper adds but little to our knowledge upon this subject.

Dr. Thompson's second article is upon Vesico-Vaginal Fistula, and comprises eleven of his quarto pages. Four of these are occupied by the histories of two instructive cases, and the remainder is made up of quotations from well-known authors, and for the reproduction of which the overburdened tax-payers are compelled to pay. However, we have less right to complain in this than in other similar instances, for, in our opinion, the matter from the middle of the 45th to the bottom of the 52d page forms the most interesting portion of the book. It comprises the history of Sims's efforts to cure this dreadful lesion, as told by himself, before the New York Academy of Medicine, with wonderful power and thrilling interest. The history is probably without a parallel in the annals of surgery, but it is questionable whether the American public should be taxed to secure its gratuitous distribution.

In this article Dr. Thompson has committed a remarkable error. On page 45 he states that prior to Dr. Sims's operations for vesico-vaginal fistula "there was no record of a single successful case," thus showing that he is not familiar with the work of his own countrymen. In addition to other cases he has overlooked those of Hayward (*Amer. Journ. Med. Sciences*, August, 1839, p. 283, and *Boston Med. and Surg. Journ.*, April 16, 1851), Mettauer (*Amer. Journ. Med. Sciences*, July, 1847, p. 117), Pancoast (*Medical Examiner*, May, 1847), and Smith, of Philadelphia (*Ibid.*, 1849, p. 155). This omission appears more strange because Dr. Thompson quotes Sims's original paper (*Amer. Journ. Med. Sciences*, Jan. 1852, p. 59), in which that author gives due credit to his countrymen Hayward and Mettauer.

Our author next treats of Vaginal Rectocele (p. 57), claiming that the disease can be radically cured only by an operation. Dr. Thompson differs materially from Sims and Emmet in his mode of operating, since he removes the vaginal mucous membrane between the points which he wishes to attach. He places his patient in the ordinary lithotomy position, makes an incision through the mucous membrane of the vagina, and then dissects this up on either side by inserting a steel director beneath it. The redundant tissue is then removed and the cut edges brought together with sutures. The reviewer has no doubt whatever that this is a great improvement upon the plan pursued by Sims, by whose method he has never succeeded in obtaining union, though he has performed the operation a number of times, while by removing the whole of the redundant mucous membrane, —whether the case be one of rectocele or cystocele—and approximating the edges prompt union is almost certain to follow.

The cases of Rectocele are clearly related, but none of them possess any peculiar interest. Every gynecologist in active practice meets with numbers of such, the records of which he does not think of sufficient interest to publish either in a medical journal or a volume of hospital reports.

The paper on Cystocele possesses no special interest, as it records no new facts and contains no new suggestions for treatment.

We now reach the section on the "Diseases and Displacements of the Uterus." (p. 70.) In the preliminary remarks upon "prolapsus uteri, complete and incomplete," there is not much to either praise or criticize. Speaking of the powers which maintain the uterus in position, no place has been given to what Dr. Matthews Duncan calls the "retentive power" of the abdomen. (*Researches in Obstetrics*, Edinburgh, 1868, p. 409.) Probably Dr. Thompson attaches no importance to this force, an inference justified by the fact that there is no recognition of the principle in the treatment of his cases. This we think is unfortunate, as attention to Dr. Duncan's suggestion facilitates the treatment of all uterine displacements.

Dr. Thompson makes some judicious remarks (pages 72-3) upon constipation as a cause of prolapsus uteri, and they might have been extended with propriety. He says that "the sigmoid flexure of the colon and upper part of the rectum become filled and gradually distended, forming a tumour which presses the uterus downward, backward, and to the right. Cathartic medicines (which are generally given in these cases) cause violent expulsive efforts on the part of the intestines, assisted by the diaphragm and abdominal muscles, tending to aggravate the uterine displacement by the increased pressure." He then goes on to speak of congestion of the uterus, but gives it no prominence. That prolapsus and other displacements may have this mechanical origin—that is, that the uterus may be pushed into an abnormal position by an overcharged bowel—we will not deny, but we think that the author would have done well had he attached more importance to congestion with consequent irritation, enlargement, and displacement of the uterus as a result of chronic constipation. That irregularity of the bowels should frequently be the starting-point of uterine disorders is easily explained. The connection between the vessels of the uterus, the hemorrhoidal veins, and the great portal circle furnishes a ready explanation of the association of the two conditions, which did not escape the notice of Simpson, who says (*Obstet. Memoirs*, Phila. 1856, vol. i. p. 53), that "the secretion of the liver and the menstrual flow seem to be almost vicarious of each other," and of Lane, who wrote a work upon this subject in 1848. Chronic constipation, by interfering mechanically with the circulation of the uterus, may induce congestion, then hypertrophy, and finally, it may be, inflammatory changes and displacements, either prolapsus, version, or flexion. We have in this a most important therapeutical principle which it is to be feared is not sufficiently recognized. The importance of keeping the bowels free to prevent certain uterine diseases, and to aid in their cure when they have set in, cannot be too strongly insisted upon.

Speaking of the treatment of prolapsus uteri, Dr. Thompson says (page 76): "Pessaries as a means of cure are worse than useless." It must be remembered that he is now speaking of the worst cases of the displacement, and as regards these the statement is in the main correct. But when the displacement is not so great, a pessary may be an important aid in effecting even a radical cure. In those cases in which the descent of the organ has followed congestion, its elevation by a properly adjusted pessary will often greatly aid in the treatment. The disposition of gynecologists is either to rely upon these agents exclusively, or to discard them altogether. Dr. Thompson seems to be one of the latter class, for we can find no mention of their use among the histories of his cases. Both courses are equally objectionable. The truth is here, as in many other cases, in the middle ground. We are not a strong advocate for the use of pessaries, being fully convinced that they often do more harm than good ;

but when employed to correct a malposition and thereby restore impeded circulation, and when used as an adjuvant to local treatment, they become important agents for the relief of some of the diseases peculiar to women.

Dr. Thompson's method of operating for the relief of procidentia of the uterus differs somewhat from that of Prof. Braun of Vienna, as described by himself (*Wiener Med. Wochenschrift*, Nos. 31 and 32, 1859) and by Dr. Munde (*Am. Journ. of Obstet.*, Nov. 1871, p. 385). Braun removes elliptical folds from either the anterior or posterior walls of the vagina, or from both, at the same time that he amputates the vaginal part of the cervix of the enlarged uterus. Dr. Thompson (page 77) "amputates the cervix and allows the parts to recover before reducing the procidentia." He says, "that this is safer, being less likely to be followed by acute inflammation of the body, or peritoneum, which sometimes follows the simple reduction without any other interference with the parts." In taking this course the author has laid himself open to serious criticism. He says nothing of the importance of preparing the tissues before operating, upon which Braun insists. These are usually hard and much altered by friction and prolonged exposure to the air. If the procidentia is kept reduced for a few days, the ordinary characters of mucous membrane are restored, the vaginal walls becoming soft and supple through relief to the obstructed circulation. Certainly it is best to operate upon tissues which are as healthy as they can possibly be made, and not upon those which are hard, horny, and irritated from friction, exposure, and abnormal position. The object of amputation of the cervix offers another reason for reducing the procidentia after the operation is performed. The juxtaposition of the cervix to the bladder in front and the rectum behind, with the fact that in many of these cases the vaginal wall is attached to the lowest portion of the uterine neck, precludes the possibility of relieving the hypertrophy by amputating any considerable portion of the cervix. Even by including a part of the anterior vaginal wall, but a small part of the diseased tissues can be removed. Hence the surgeon has to rely upon other agencies which he calls into play by his operation. The improvement in the condition of the uterus is chiefly due to the inflammation which is induced, which in some way stimulates the absorbents, leads to removal of the diseased tissues, and consequent diminution in the size of the offending organ. This being the case, the plan of Dr. Thompson is open to serious objection, since by leaving the procidentia unreduced he fails to obtain an aid of which he might avail himself by removing the impediment to the circulation by restoring the uterus to its natural position after amputation of the cervix. The principle is very important in the management of uterine displacements, either originating in inflammation or producing it consecutively. We have ourselves followed Braun, and after removing a portion of the hypertrophied cervix replaced the prolapsed uterus and maintained it as nearly as possible in the natural position by tamponing the vagina with pledgets of cotton soaked in glycerine.

Dr. Thompson's objection that this course is more likely to result in inflammation both of the uterus and peritoneum is hardly valid. We are perfectly aware that the simple reduction of a long standing procidentia may be followed by serious symptoms and even by pelvic peritonitis; but this does not invalidate the position which we have taken. Certainly removing the congestion of the uterus by restoring its position will tend to prevent, not produce, inflammation, while the danger of this supervening after the operation, and producing adhesions with the uterus still out-

side of the body, is too serious to be assumed lightly, since it is a demonstrated fact, that any inflammation of the cervix, body, or living membrane of the uterus, whether it occurs spontaneously or is induced by an operation, is likely to be followed by pelvic peritonitis and its consequences.

The reports of a number of cases of prolapsus and procidentia are given. It would have been better if these had been more full. It is interesting to know how rapidly absorption and consequent diminution in the length of the cavity of the uterus go on after amputation of the cervix, but Dr. Thompson's records do not furnish the data by which this can be ascertained. His fifth case of prolapsus (page 82) is very interesting on account of the remedies employed. "Subcutaneous" injections of strychnia thrown *into the vaginal walls* are stated to have "acted like a charm;" the absorbents of the uterus being stimulated to increased activity, so that at the expiration of seventeen weeks the patient was "perfectly cured without any surgical application." This application of strychnia, so far as we know, is original, and from the result obtained appears to be worthy of a trial in similar cases.

Uterine tumours are discussed on page 91, and one of the cases (page 96) teaches a very important lesson. Pelvic peritonitis and metritis resulting in death followed the use of a sponge tent, employed to examine a myo-fibroma of the uterus. Again, on page 102 is the history of a case in which tetanus supervened after the use of this same agent. These facts very justly lead the author to assert that sponge tents "are by no means the simple agents they are generally supposed to be. Like other potent remedies, they should be used with great care and circumspection." While we most cordially agree with this caution, having learned from bitter experience the accidents that sometimes follow their use, we cannot support the author in the measures by which he proposes to prevent them. He writes (page 104) that he has been induced "in all cases where the employment of a sea-tangle or sponge tent is indicated, first, to divide the fibres around the internal os," since which, he says, he has seen no trouble following their use. We are not told how long this plan has been pursued, nor in how many cases it has been adopted, but we cannot help regarding it as a most reprehensible procedure. Gynæcologists whose experience has made them aware of these dangers, seek to avoid them not by still more irritating methods, but by properly preparing their patients before the introduction of the tent and sedulously watching them afterwards. We have never tried Dr. Thompson's plan, and after having seen pelvic peritonitis follow the introduction of the uterine sound—apparently having the relation of cause and effect—shall not feel inclined to do so until the author has more carefully recorded his facts.

Subinvolution of the uterus is next considered, and then follows a long paper upon cancer of the uterus and mamma. This is largely made up of quotations from the writings of various authors from Hippocrates to Woodward. Desiring to deal chiefly with the author's own views, there is but little to examine. Dr. Thompson attempts to revive the old doctrine that cancer of the uterus has its origin in previous inflammation of the organ, a view to which Dr. Noeggerath has also recently attempted to give some prominence. (*Am. Journ. of Obstetrics*, vol. ii. pp. 505, 610.) We cannot see that our author has proved his position, which is at variance with the opinion of most authoritative gynæcologists. This question is important since it leads our author, who seems to have no dread of heroic measures, to suggest operative interference for the

prevention of cancer of the uterus. On page 154 he says: "If chronic inflammation of the cervix in some constitutions results in carcinoma, will it not be good practice to amputate the cervix whenever the disease is found intractable to ordinary remedial measures? Why not give the patient the security which this operation affords?" It is further stated that the procedure is devoid of any special danger, and that "quite a large majority of these cases of chronic cervical metritis are incurable by any other means." Both of these propositions are to be combated. That a large majority of cases of inflammation of the uterus are incurable by much milder remedies than amputation of the cervix, we cannot forbear denying. We dread this much less than many other disorders of females, and cannot but suspect that Dr. Thompson has erred in diagnosis, or that he has not continued his treatment long enough to effect the desired result. No matter how long simple inflammatory disease has existed, nor how severe it may be, we always have a hope of curing it, if it has not resulted in serious flexions, and indeed we have often been surprised at the rapidity with which an indurated and enlarged cervix would soften and diminish in size when we had perfect control of our patients, as the author has of his, in hospital wards. Moreover, no operation upon the uterus is entirely devoid of danger, and even though a woman may suffer greatly—though you may think she is in danger, at some remote period, of being attacked by a disease which will inevitably destroy her life, it is a very serious matter to insist upon performing an operation which may produce death in a very short time. It is also to be remembered that in chronic inflammation, as in hypertrophic enlargement of its supravaginal portion, and in procidentia of the uterus, amputation of the cervix probably does good through the nutritive changes which it induces, and not because a considerable portion of the diseased tissues can be removed. If, as seems probable, inflammation is the agent which effects these alterations, is it not fair to conclude that the induction of this in some less bold manner will be just as beneficial? We think we have found it so, and cannot but believe that the cases of uncomplicated chronic uterine inflammation, in which such heroic interference is demanded, must be very rare.

In relation to the treatment of cancer when the disease is "confined to the vaginal portion of the cervix, and the contiguous tissues are not implicated," removing as much tissue as possible, "without endangering the peritoneal cavity," is recommended (p. 153). We wish that the author had told us how often he had met with cancer in this incipient stage. For our own part we confess—after considerable observation, in which a good deal of attention has been given to this subject—that, with the exception of cauliflower excrescence, we are utterly unable to diagnosticate non-ulcerated cancer, until the contiguous tissues are implicated. It is greatly to be regretted that the powers of some persons are so limited, but we hesitate less in making this acknowledgment when we remember Dr. J. Henry Bennett's criticism of Ashwell's cases (*Practical Treatise on Inflammation of the Uterus, etc.*, Phila., 1864, p. 423); the discussion of Dr. Wynn Williams's cures of this disease by injecting solutions of bromine into the substance of the uterus (*Trans. Obstet. Soc. of London*, 1871, vol. xii. p. 249); and the distinct statement of Prof. T. Gaillard Thomas, of New York, that he has seen but one case of non-ulcerated cancer, and "in that the diagnosis was made by the peculiar hard nodular feel of the cervix, and by the coincident implication of the vagina. Without vaginal implication," he says (*Practical Treatise on the Diseases of Women*, 2d ed., Phila., 1869, p.

444), "I should have hesitated in arriving at a positive diagnosis, and I feel sure that he who ventures upon a decision as to the nature of the disease at this period must expose himself to great risk of error." Authorities might be multiplied, but it is unnecessary. If Dr. Thompson is in possession of any information which enables him to diagnosticate this disease at this early period, it is due the profession and suffering women that it should be made known at once. If he has not, we cannot but conclude that he has mistaken chronic inflammatory enlargement for carcinoma.

Our author removes the cervix, with a pair of strong blunt-pointed scissors, having previously seized it by a strong volsella, and made "sufficient traction to bring it fairly within reach." (p. 153.) He claims that the *écraseur* is dangerous, as too much tissue may be dragged within its grasp. He does not seem to be familiar with the instrument devised by Dr. J. Braxton Hicks, for operations on this part (*Guy's Hospital Reports*, vol. vii., 3d series, p. 252). The objections to the chain *écraseur* do not apply to this, for its flexible wire can be applied anywhere in the cavity of the vagina, so that the operator is enabled to remove the diseased mass with the uterus *in situ*. This it seems to us is an important consideration, for, as Dr. Hicks pointed out in 1866 (*Guy's Hospital Reports*, 3d series, vol. xii. p. 370), adhesions between the body of the uterus and adjoining organs may be broken, and since pelvic peritonitis is an ordinary complication of uterine cancer, it is best to entirely avoid this danger, as well as the shock which sometimes follows dragging the uterus down.

The objection made by Dr. Thompson, that the peritoneal cavity may be opened, has but little force, if the operation is properly performed. The wire should be applied at the attachment of the vagina and cervix, and the instrument kept well up while the screw is tightened. If this be done, there is no danger of opening the peritoneal cavity, while the objection which the author makes to the chain instrument is an advantage in this one, for it will drag in the largest quantity of tissue that can be safely removed, while it effectually prevents either primary or secondary hemorrhage; to the latter of which the woman is liable for several days, if the cervix is amputated with the scissors.

Nothing is said of the treatment of uterine cancer by scraping away the diseased tissue; a plan which has recently been recommended by Prof. Simon of Heidelberg, and described by Dr. Munde of New York. (*Am. Journ. Obstet.*, Aug. 1872, p. 309.)

Then follow papers upon "diseases of the vagina and cervix uteri," and "chronic cervical metritis and endometritis." The former is chiefly remarkable for illustrating Dr. Thompson's singular disposition to make long quotations. Tyler Smith is laid under obligation most extensively in this chapter. The second, on chronic cervical metritis and endometritis, is of inferior merit. The cases are of ordinary interest, and the remarks upon the disease contain nothing not well known to the profession. The description of the disease is vague and imperfect, and the rules for treatment are not what we should expect from a hospital physician and a clinical teacher in the College of Obstetrics and Gynecology, Washington, D. C.

On page 199, a case of chronic cervicitis is related. The cervix was two and a half inches long. This is evidently the hypertrophic elongement of the cervix described by Huguier and others, and should have been included in another category. The cervix was very properly amputated, but the same cannot be said for the operation in the next case (p. 200); a patient who was admitted on May 9th, with the "cervix hypertrophied and

the portions around the os of stony hardness." Consistent with his theory, that this was "a case to invite malignant disease," the cervix was removed on May 11th. These are all the indications that are mentioned for this operation. Certainly such cases should be fully and succinctly related, and the profession furnished with details which will enable them to determine what degree of hypertrophy warrants this form of surgical interference. As this history is related, we cannot but believe that most physicians would have relieved the patient, not sooner probably, but by less heroic means.

We are next favoured with the history of a patient from whose bladder an iron crochet needle was removed. The case is interesting, and resembles one reported by Dr. T. G. Morton (*Pennsylvania Hospital Reports*, 1869, vol. ii. p. 46), and which, with all his fondness for quotations, Dr. Thompson does not notice, though he favours us with no less than thirteen consecutive pages from Morgagni.

What possible reason there is to include an account of an operation for extirpation of the parotid gland in the report of a hospital for parturient women, and for diseases peculiar to their sex, we cannot tell. Nevertheless such a case is related, as well as the history of the "successful removal of an hypertrophied third lobe of a thyroid gland."

The history of a case of impacted feces mistaken for an ovarian tumor, a paper on pelvic cellulitis, and some remarks upon diseases of the rectum, close Dr. Thompson's portion of the Columbia Hospital Report.

These papers of Dr. Thompson are illustrated, and we cannot pass over this part of the work without saying something about the figures. They in no way add to the attractiveness of the report, and certainly will not increase the reputation of Washington artists. Dr. Thompson has not only copied many of his illustrations, but in some cases has failed to give credit to their authors. Figure 2 of Plate I. bears a striking resemblance to one of Mr. Baker Brown's plates, but Dr. T. has more than copied the faults of his predecessor. The genital organs of Washington females must be most peculiarly constructed if their vaginal walls are as angular as represented in the wood-cut. After Parvin's criticism (*Am. Practitioner*, 1873) of Baker Brown and his copyists, we had hoped that no American writer would be guilty of committing similar errors, but here is one which has far outstripped the blunders of his predecessors.

In the chapter on "Diseases of the Vagina and Cervix Uteri," the illustrations, like a large portion of the text, are from Tyler Smith's work on Leucorrhœa, but the former are inserted in such a way as to mislead the reader into the impression that they are original. However, there is good reason to conclude that any author, whose plates are thus appropriated, will not complain that they are unacknowledged, for Plate VII., page 77, is said to be from Savage. If this report meets the eye of the author of the magnificent work *On the Surgery of the Female Pelvic Organs*, he will certainly fail to recognize his own production, so marvellously has it changed under the copyist's hand. In view of this fact we shall say nothing of certain other remarkable pictorial productions to be met with in the work.

We now come to the consideration of the second portion of the volume, the Appendix, the first part of which is a report on the Department for Diseases of Females at the Columbia Hospital Dispensary. This is written by Dr. F. A. Ashford, and is by far the most interesting and important part of the work. The author is evidently a most painstaking and careful

writer, and his report has a freshness about it, because it is, in the main, composed of his own observations. These, it is true, may not be original, but the analysis of any series of carefully observed cases is important, especially when the author, as in this instance, uses his experience to reiterate important rules of treatment.

The report of Dr. Ashford opens with a tabulated statement of 1612 cases, which have been treated at this dispensary. Comparison of this table with one recently published by Hewitt of London (*Diseases of Women*, Philadelphia, 1873), furnishes some striking results. Out of 1205 cases analyzed by the latter writer, no less than 296 were versions and flexions, of which there were 184 cases of anterior and 112 of posterior displacement. Dr. Ashford, however, met with only 50 cases of version and flexion, of which 20 were anterior and 30 were posterior. This discrepancy is very striking, and is difficult to account for, since a reference to the text of Dr. Ashford's paper shows that he is fully aware of the importance of these displacements. Dr. Hewitt has, we think, overestimated their frequency and importance, while Dr. Ashford probably does not give them a sufficiently prominent place.

We next have a report on metritis. Two very interesting cases of acute inflammation of the uterus are related. Both resulted from direct injury to the organ from attempts to produce abortion, though neither patient was pregnant. In both instances the injuries were self-inflicted. In the first, abscess of the uterine wall occurred, and was opened with a bistoury, the only example of this very rare lesion which Dr. Ashford has met with in 2500 cases of diseases peculiar to women. The second patient passed a sharpened piece of whalebone into the vagina, and thrust it through the anterior lip of the cervix just at its vaginal attachment. It passed upward and backward into the cavity of the uterus. The remarks which follow upon the treatment of this disease, the great necessity for care to prevent chronic inflammatory disease, and on the rarity of acute metritis are judicious and will well repay perusal.

Dr. Ashford's analysis of the cases of chronic metritis which have come under his care is of great interest. He very properly insists upon the need of care in examining the patient, and from his practical experience reasserts the value of the bimanual method of examining the uterus. This may hardly seem necessary to some, but when it is remembered that resort to it is frequently neglected, the plain forcible way in which the author states the results of his experience will not be without good results.

The most important part of his paper on this disease relates to treatment. Dr. Ashford is a convert to the utility of sponge tents and intra-uterine injections, but he employs them with so much care that he does not seem to have been annoyed by unpleasant consequences. He alludes to one case in which uterine colic followed a simple vaginal injection, in administering which he says, the nozzle of the syringe was inserted into the mouth of the uterus. This is not always necessary to produce these unpleasant symptoms. We have twice seen it follow the use of simple vaginal injections for leucorrhœa, in which there was not the slightest reason to believe that the nozzle of the syringe had been inserted into the os uteri. In both cases the injection was used a day or two after the cessation of the menses. In one instance the symptoms were so serious as to threaten life. Dr. Ashford fully recognizes the dangers of intra-uterine injections unless the os is fully dilated, and free egress is allowed the injected fluid. He sometimes employs Nott's canula (*Amer. Journ. of Obstetrics*, vol. ii.

p. 491), an instrument which possesses many advantages. We can bear testimony to its usefulness, having repeatedly employed it within the last few years without any untoward accident. The author's remarks upon this subject, though containing nothing absolutely new, are judicious, to the point, and well worthy of study.

Following Dr. Ashford's report is one from Dr. Samuel C. Busey upon the Department for Diseases of Children. The first paper, an interesting one, is upon intermittent fever. This is a subject of more importance than many seem willing to admit. There is no doubt that the disease may assume very peculiar forms, and be singularly masked in young children. We would have been glad if Dr. Busey had given us a full and succinct analysis of the symptoms in his cases at the Columbia Hospital. He does not refer to Dr. C. Hanfield Jones's interesting remarks upon what he calls "Malaroid Disease" in young children (*Studies on Functional Nervous Disorders*, London, 1870, p. 765), which some may think an overdrawn picture. This, however, is not true. Considerable experience has convinced us that, as in adults, the malarial poison may produce the most singular effects in children, and that in them it is particularly liable to be attended with severe nervous symptoms. Drs. Jones and Busey both speak of delirium and convulsions. Moreover the periodicity of the disease is not so perfectly developed as in adults. At the same time the affection may be immediately dangerous, and if not met promptly by proper treatment may quickly terminate in death, the child apparently perishing from grave cerebral disease; suddenly becoming pale, cold, and blue, but without a rigor it soon flushes and becomes stupid, with or without convulsions. The stupor is sometimes so profound that it is impossible to rouse the little patient. That this condition should be mistaken for an acute cerebral disease of such a character as to warrant the most grave prognosis is not surprising. But a few hours are sufficient to produce a surprising change. Perspiration occurs after a little time, and with it the stupor diminishes, so that towards morning the intelligence may be quite restored. Later in the day the paroxysm recurs, unless anti-periodics are administered in the intervals. It is easy to see that a condition such as that described may quickly prove fatal if not promptly treated.

Quinia is the specific, but here we must protest against the doses which Dr. Busey recommends. We are perfectly familiar with the fact that Binz and Jacobi have demonstrated, or rather reasserted Briquet's statement, that infants will bear large doses of this remedy. Practical experience has taught us the same thing, but it has not proved that these quantities of the drug are necessary or useful in intermittent fever. We can fully confirm the assertion of the able reviewer of this Report in the *Philadelphia Medical Times* (July 19, 1873, p. 669), who says that in the treatment of the malarial diseases of children it is not necessary to give a larger proportional dose than that prescribed for an adult. In the management of this disease in adults we have always tried to avoid giving more quinia than is really necessary to arrest it. We do not hesitate to say that two or four grains of the drug given between the paroxysms will as certainly arrest the disease in a child two or three years old as twenty grains will in an adult. That disproportional quantities will sometimes cinchonize them to their serious detriment, we think we have seen fully demonstrated.

The next article is entitled "Enterocolitis, Cholera infantum, Dysentery, and Dentitio difficilis." The author says (p. 321) that "to avoid confusion

and repetition" he has "associated these four allied disorders," between which, he adds, "all admit that clinically it is impossible to determine with accuracy the pathognomonic differences." And again he asks (p. 332), "Is not the distinction one of degree rather than of kind?" We might express our surprise at this question. The association of difficult dentition with the three intestinal diseases is peculiar, and no doubt arises from the fact that children are very liable to these affections of the bowels during the period when the teeth are making their appearance. But Dr. Busey himself very justly doubts whether the fourth is entitled to the distinction of being a distinct disease. We believe that it is not. Dentition is a purely physiological process, and is much less frequently attended with serious symptoms than is generally believed. We know that all of these disorders of the bowels, as well as many others, are frequently attributed to difficulty in cutting teeth, but we are satisfied that the assurance which many physicians give anxious mothers, that the symptoms which have alarmed them are due to teething, is but a cloak for their own ignorance. It is quite time for this bugbear of the nursery to be put among the things of the past, and for physicians to learn that the diseases of their little patients can only be understood by patient investigation. The more careful the examination the less frequently will the medical attendant find himself attributing diarrhoea, vomiting, convulsions, or paralysis to the influence of dentition, and the more frequently will he find other means to account for the conditions observed.

But is the distinction between enterocolitis, dysentery, and cholera infantum "one of degree rather than of kind?" We hardly know how to reply to such a question, but would ask in return whether the author considers diarrhoea, dysentery, and cholera morbus, or Asiatic cholera of adults a disease differing in "degree rather than in kind?" If he does, we might inquire whether he regards bronchitis, pneumonia, and phthisis to differ "in degree rather than in kind?"

The directions of Dr. Busey for the treatment of this disease are, in the main, judicious.

Following this is an interesting paper on "the value of certain drugs in the treatment of bronchitis," but we have not the space to analyze this, while we will not attempt to criticize the report of the Department for Diseases of the Eye and Ear, by Dr. D. W. Prentiss, which ends the volume.

In closing this review we must express our regret that the volume does not contain more matter worthy of praise; but with its long quotations and unacknowledged illustrations, it is probably the most notable example of book-making which has issued from the American press for a long time. It certainly will neither add to the reputation which the reports from the Surgeon-General's Office have achieved for the medical publications of the Government, nor give fame to the "College of Obstetrics and Gynecology, Washington, D. C.," whose faculty is, for the most part, composed of the authors of this report; and whose advertisement has been circulated with it. The volume contains no information sufficient to make it desirable that the publication should be continued, even if we thought the support of such a hospital and the publication of its annual report by the Government justifiable under any circumstances.

J. S. P.

ART. XII.—*Contributions to Practical Surgery.* By GEORGE W. NORRIS, M.D., late Surgeon to the Pennsylvania Hospital, Vice-President of the College of Physicians of Philadelphia, Member of the Société Médicale d'Observation of Paris, etc. 8vo. pp. 318. Philadelphia: Lindsay & Blakiston, 1873.

ALTHOUGH for more than thirty years the name of NORRIS has been a household word with American surgeons, and indeed with surgeons in all parts of the civilized world in which the English language is either read or spoken, this is, we believe, the first occasion on which the distinguished author of the volume, the title of which is given above, has come before the public as the writer of a book. It must, we are sure, prove a source of great and sincere gratification to all lovers of the noble art which he has done so much to adorn, that Dr. Norris has at last brought together and placed in a permanent form the more important of those "contributions to practical surgery," which have made his name so familiar to all students of surgical science, and which, as they successively appeared (mainly in the pages of this Journal), tended to diffuse such uniformly sound and correct views upon the various important subjects of which they treated.

In his brief and modest preface, Dr. Norris tells us that several of the essays contained in his volume

"have met with favourable notice abroad as well as at home, and have been freely made use of by later writers, in some instances with but slight notice of their sources. The statistical method of investigation at the time of their publication was something of a novelty in surgery, and was looked upon with suspicion, but it is now everywhere accepted as one of value in all departments of research."

We may add that, were all statistical investigations conducted with as much care and candor as those of the author, the numerical method would, probably, now be still more favourably regarded than it is.

The essays contained in the present volume are (1) On the occurrence of non-union after fractures;¹ (2) On the treatment of deformities following unsuccessfully treated fractures;² (3) Statistics of fractures and dislocations treated in the Pennsylvania Hospital during the twenty years from 1830 to 1850;³ (4) On compound fractures; (5) Statistical account of the cases of amputation performed at the Pennsylvania Hospital from January 1, 1850, to January 1, 1860, with a general summary of the mortality following this operation in that institution for thirty years;⁴ (6) Statistics of the mortality following the ligature of arteries, viz., the subclavian,⁵ the iliac,⁶ the carotid and innominate,⁷ and the femoral;⁸ and (7) an instructive case of varicose aneurism at the bend of the arm.⁹ The paper on compound fractures is now published for the first time, while the essays on the occurrence of non-union after fractures and on the treatment of deformities after fractures have received very considerable additions, the new

¹ See No. of this Journal for Jan. 1842, p. 13.

² Ibid., Oct. 1842, p. 305.

³ Ibid., April, 1841, p. 324, and Oct. 1852, p. 301.

⁴ Pennsylvania Hospital Reports, vol. i. p. 149.

⁵ No. of this Journal for July, 1845, p. 13.

⁶ Ibid., Jan. 1847, p. 13.

⁷ Ibid., July, 1847, p. 13.

⁸ Ibid., Oct. 1849, p. 313.

⁹ Ibid., Jan. 1843, p. 27.

material in each constituting indeed rather more than one-fifth of the whole. The third paper, on the statistics of fractures and dislocations, has also been improved by the introduction of various illustrative cases, some hitherto unpublished and some extracted from other contributions of the author to this Journal.¹ The subjects which have been especially elaborated in the additions to this paper are fracture of the neck of the thigh-bone, dislocation of the astragalus, and dislocation of the shoulder complicated with fracture of the neck of the humerus. The statistics of amputation and of the ligature of arteries are pretty much reprints from the papers in which they first appeared, in the Pennsylvania Hospital Reports and in this Journal.

There is no occasion at this late date to offer any critical review of Dr. Norris's writings. They have long since become classical, and we think too highly of American surgeons not to believe that all are acquainted with these admirable contributions to surgical literature. We shall therefore do no more than call attention to some of the additions to the essays on ununited fracture and deformity resulting from fracture, and shall then briefly examine the newly published essay on compound fractures—an essay which, combining as it does the fruits of wide reading with the slowly acquired wisdom derived from practical experience, may well serve as a model of its kind.

The essay on the *Occurrence of Non-union after Fractures*, as originally published, has been justly characterized by Prof. Hamilton, of New York, as “the most complete and reliable monograph upon this subject contained in any language,” and, with the valuable and extended additions now made to it by the author, is, we hardly need say, even more exhaustive and trustworthy than in its original shape. To some of these additions we will now refer:—

On page 10, is added a paragraph which draws more clearly than was done before the distinction between the existence of *delayed union* and the occurrence of true *ununited* or *disunited* fracture. On page 14, the account of Duhamel's and of Haller's experiments is supplemented by a statement of the views of Bordenave and of Macdonald; and on pages 19 *et seq.*, suitable reference is made to the modern teachings of Virchow, Foerster, Rindfleisch, Billroth, and Gurlt, essentially confirming the doctrines of Dupuytren, as well as to the opposing views which have of late years been promulgated by Paget and Hamilton. In the pages devoted to the consideration of the *causes* of ununited fracture, additional illustrations are given of the influence in this respect of cancer, of general impoverishment of the system from starvation or deprivation of an accustomed stimulus, of paralysis, of undue motion of the part, etc. Many additional examples are also given of the existence of ununited fracture in persons who were yet able to make great use of their injured limbs, but, as might be expected, the most important interpolations are in that portion of the essay which is devoted to the subject of the *treatment* of false joint.

Under the heading of *friction*, the credit of having been the first to employ an external support while allowing the patient to use the limb, so as by the “stimulus of exercise” to lead to the formation of callus, is given to White, of Manchester, who thus successfully treated an ununited fracture of the thigh in 1768. Similar contrivances have been since resorted to by Inglis, by Troschel, by Prof. Smith, of this city, and by other surgeons.

¹ Ibid., Aug. 1837, p. 378, and Jan. 1843, p. 13.

The first suggestion of the *seton* as a means of treating ununited fracture has been, as is well known, often attributed to Winslow; but Dr. Norris has been able, by referring to the original memoir written by that surgeon, to determine that it was in a case of necrosis and not of false joint, that he used the seton, and that the credit of having been the first to employ it in the management of pseudarthrosis is rightly due to our own Physick.

Full and fair accounts are given of the methods of treatment introduced by Dieffenbach, Brainard, Miller, Jordan, Ollier, and Bigelow, and indeed everything of real importance in the recent literature of his subject has received Dr. Norris's careful attention.

The most important additions to the essay on the *Treatment of Deformities following Fractures* consist of further illustrations of the practice of rupturing the callus, and accounts of the operative measures which have been employed by Josse, of Amiens, Rynd, of Dublin, Brainard, of Chicago, and various other surgeons.

In the essay on *Compound Fractures*, Dr. Norris points out the much more serious character of those cases in which the wound is produced by external violence, than of those in which the laceration of the soft parts is due to the protrusion of the broken bone :—

"In the first of these classes the wound is generally large and accompanied with great laceration, the bone being often comminuted, and the case altogether one of the most serious kind; but in the second class the external injury is mostly of small extent, and no other parts are injured than those with which the bone comes in contact—union of the wound by the first intention frequently follows, and, even if this desirable event is not obtained, it is soon covered by granulations which speedily cicatrize."

The influence on the progress of the case of the age, habits, and constitution of the patient, and of the season of the year at which the accident occurs, are duly considered, and the increased risk when the seat of fracture is near a large joint clearly pointed out :—

"In making a prognosis, too, it is of importance to consider the limb affected and as a general rule it may be stated that the nearer the fracture be to the trunk, the greater the risk incurred by the patient. In the country, or in private practice, the chances of saving a limb in these accidents is always greater than in large cities or in hospitals. In civil hospital practice, compound fractures of the arm and forearm generally do well; in the leg, under the same circumstances, where an attempt is judged proper to save the limb, the accident is more serious, and a number must either suffer secondary amputation or die, and in the femur the majority of adults will not survive them."

Dr. Norris believes that with the exception of such as are produced by railway and machinery accidents, the compound fractures met with in civil life are less dangerous than those which are due to gunshot injury, and quotes with approval the saying of Dupuytren, viz., "on one point my opinion is unchangeable. In rejecting amputation in them [gunshot fractures] more lives are lost than limbs saved." In considering what cases of compound fracture demand immediate amputation, Dr. Norris justly insists upon the importance of regarding the age, habits, and constitution of the patient, as well as the degree of care and attention which he can command during the course of treatment. Thus amputation might be properly performed in the case of an old, feeble, or intemperate person, or of one who was to be treated in a crowded hospital or to be transported a considerable distance from the place at which the injury was received, when the same operation would be quite unnecessary in the case of a young

and healthy subject, or of one who lived in the country or who could be nursed in a pure and uncontaminated atmosphere. The *local* conditions which indicate amputation are stated by Dr. Norris as follows:—

“1st. Where the bone is comminuted, and the soft parts so much contused, lacerated, or destroyed as to make it evident that gangrene must follow.

“2d. Where the bone is fractured and a portion of the limb torn off by machinery, the bursting of a gun, a cannon shot, or the passage over the part of a railroad car.

“3d. Where the laceration of the soft parts around the fracture is very extensive or extending into a large joint, even though the bone be not comminuted.

“4th. Where the fracture, though accompanied with but little laceration, extends through the head of a bone into a large joint, as the knee or shoulder. [This rule is subsequently qualified by the statement that in suitable cases, at least in the shoulder, elbow, and hip, excision should be preferred to amputation.]

“5th. Where the bone is fractured in more than one point and accompanied with great laceration and contusion of the surrounding parts, or in cases where the bone is extensively exposed with the soft part separated from it, especially if the fracture be in the neighbourhood of an important articulation, and has been produced by the application of direct force.

“6th. In cases where the injury is not so extensive as in the instances mentioned, but is accompanied with the division of the principal artery and nerves, for though neither the division of the vessel, the laceration, nor the fracture may alone justify the removal of the limb, yet the whole together will frequently make it necessary.”

Dr. Norris is in no degree an advocate of indiscriminate amputation, and justly remarks that the risk of the operation itself should be duly considered in every case—

“Since it by no means follows, as many seem to think, where these accidents terminate fatally in our attempts to save them, that life would have been preserved had the operation been done, . . . another cogent reason for giving to the patient the benefit of even the slightest rational doubt in determining upon the question of amputation.”

These remarks of course apply rather to civil than to military practice; for in the latter, unfortunately, the exigencies of war often render it imperative to make amputation the rule, and an attempt at conservation the exception.

When it is determined in a case of compound fracture, to make an attempt to save the limb, the surgeon's first care should be given to the arrest of *hemorrhage*. If this be arterial, a tourniquet may be applied, but only temporarily, and every bleeding vessel should be carefully secured, both ends being tied if the vessel be of large size. Venous hemorrhage may be controlled by rest and position, aided if necessary by the application of cold and moderate compression. *Foreign bodies*, including particles of dirt, shreds of clothing, and fragments of bone which are entirely detached, are next to be searched for with the finger and carefully removed, and the fracture should then be at once *reduced*, not however by the sudden application of force alone, but by moderate and gradual extension, aided if necessary by enlarging the wound or removing the protruding end of the broken bone. The latter measure, though very seldom called for, is regarded by Dr. Norris as a legitimate resource in cases in which the fracture is otherwise irreducible. Recurrence of displacement is to be prevented by placing the limb in a proper position and by giving support “without the aid of tight bandages or great pressure.”

As regards *position*, Dr. Norris expresses a decided preference, in the case of the lower extremity, for the plan of extending the limb,

"inasmuch as it is easier for the patient, as well as his attendants, and permits of less disturbance of the fragments, while its results are fully equal to any that can be attained by the position of Pott, or the semi-flexion of the knee with the patient on his back."

In the case of the upper extremity, Dr. Norris directs that the part should be fixed on suitable splints, and the patient kept in bed with the limb supported on a pillow till after the subsidence of fever, when he may be allowed to move about with the part sustained by a sling.

"The important requisites for treating fractures successfully are coaptation and immobility, and in my judgment it matters little what particular apparatus is employed, provided it be made to fulfil these indications, and keep the limb quiet and firm, and admit of the dressings being removed and reapplied without giving pain to the patient, or moving the fragments. The simpler the appliances the better."

When the laceration in the soft parts has been made by the protrusion of the bone, an attempt may be made to convert the case into one of simple fracture, by bringing the edges of the wound together with strips of adhesive plaster, and afterwards applying a many-tailed bandage, or by adopting the old plan of imbuing a piece of lint in blood and allowing it to dry over the injured part. The lightest dressings only should be employed in warm weather, and in winter soft poultices or lint wet with tepid water. Dr. Norris's experience has not led him to look upon well-made poultices with the aversion professed towards them by many modern writers. In case of profuse suppuration, or of troublesome venous or capillary hemorrhage, the bran dressing is recommended; it is particularly useful in summer by hindering the deposit of the ova of flies, and by preventing in a great degree the odor that would otherwise arise from the wound. It may be supplemented by the addition of an ice-bag laid over the surface. Irrigation is sometimes of service in hot weather, in the early stages of compound fractures which are attended with great laceration and contusion of the soft parts, but its indiscriminate use is condemned by Dr. Norris, who believes that its employment favours attacks of inflammation of the respiratory organs.

We observe with satisfaction that Dr. Norris still stands firm, and has in no degree yielded to the prevailing epidemic fondness for the starched bandage and other forms of the "immovable apparatus:"—

"That this treatment," he says, "in compound fractures has been in very numerous cases followed with good effects by its introducer and his pupils, as well as by its more recent advocates, cannot be doubted, but the frequent occurrence of severe inflammation, abscesses, gangrene, and want of union, and where cures occur, the deformities seen in the hospital services in which it has been used, leads me here, as in simple fractures, to condemn its general employment. Its chief value is, I think, to be found in its adaptation to military surgery. In civil practice, it is particularly objectionable when placed upon the limb immediately after the occurrence of the accident."

During the early stages of a compound fracture, the dressings should be examined twice, and renewed once daily—and this as well as changing the bedclothes and body linen should invariably be done under the surgeon's personal supervision, and not entrusted to nurses or other unskilled attendants. In fractures of the lower extremity, the weight of the bedclothes should be kept from the foot by the use of a rack or cradle, and, when the leg is the affected part, the patient's comfort may often be pro-

moted by suspending the limb in a fracture-box or by means of a suitable splint.

The various *complications* of compound fracture are succinctly considered by Dr. Norris, the most important being rupture of a large vein, nerve, or artery, previous disease of the bone, and concomitant luxation. Bleeding from a ruptured *vein* can usually be controlled by cold and pressure, with elevation of the injured limb; laceration of *nerves*, when amputation is not required, calls for the application of warm fomentations or poultices, with the free use of opium; rupture of a large *artery* is a most serious complication, and will often necessitate removal of the limb, though if other circumstances are favourable an attempt may be made to save the part by tying both ends of the bleeding vessel, or if the source of hemorrhage cannot be found by securing the main trunk at a higher point. Amputation is usually necessary when a compound fracture occurs in a previously *carious* or *necrosed* bone. When *dislocation* occurs as a complication of compound fracture, every effort should be made to effect reduction before permanently putting up the broken bone.

Various secondary complications may arise during the treatment of a compound fracture. If the patient be attacked with *delirium tremens*, the wound should be closed with adhesive strips and compresses of soft lint or charpie, and then the whole limb enveloped in a large and well-stuffed pillow held in place with a roller bandage. *Retention of urine* is to be guarded against by the use of the catheter; *erysipelas* to be met with suitable constitutional treatment and mild local applications; and early and free counter openings to be made to evacuate *collections of matter* in the neighbourhood of the wound. The presence of *maggots* is to be avoided by attention to cleanliness and by careful dressing; when present they may be got rid of by washing the part with cold water or weak vinegar and water, or by dressing the wound with preparations of carbolic acid, or tar or creasote ointment. *Excoriations and bed-sores* may usually be prevented by careful dressing, by bathing the parts with whiskey or soap-liniment, and by relieving pressure by means of water-beds, air-cushions, soft pillows, etc., and by the application of kid spread with soap cerate. When bed-sores actually occur, they must be treated as sloughing sores met with under other circumstances. Other secondary complications of compound fractures are *tetanus* and *pyæmia*, of the latter of which affections Dr. Norris has given a very interesting account under the heading of *secondary inflammation and deposits of pus in distant parts*. Here is reproduced, with alterations and additions, the author's excellent chapter on the subject from his edition of Sir Wm. Fergusson's "System of Practical Surgery," a chapter which, apart from its intrinsic merits, possesses much historical interest, as having been one of the first to call the attention of American surgeons to the frequent occurrence and fatal character of this disease.

Not long since we noticed a communication to a foreign journal, deprecating the use of anodynes in surgical cases, and gravely maintaining that a sleepless night would do a patient less harm than a dose of opium; we are glad to observe that Dr. Norris gives no countenance to this, which we cannot hesitate to characterize as a most atrocious doctrine.

"Great benefit," he declares, "will be found to follow the free use of anodynes immediately after the occurrence of the accident, and their continuance, as well for the purpose of prolonging sleep as of assuaging pain and quieting the mind, is always proper. Long observation in hospitals has so convinced me

of the beneficial effects of anodynes after severe injuries, that I cannot too strongly recommend their judicious employment. No theoretical considerations should interfere with their use."

The concluding portion of the essay is devoted to an examination of the circumstances under which secondary amputation may become necessary. In cases of *traumatic gangrene*, though acknowledging that the question of immediate amputation is still an open one, Dr. Norris says that he has himself always waited for a line of demarcation to be formed, and that he has as yet seen nothing which would lead him to deviate from this practice. *Secondary hemorrhage*, which may follow the separation of sloughs or may result from the pressure of an edge of bone on an adjoining artery, often necessitates amputation, though in favourable cases Dr. Norris deems an effort to save the limb by securing the main artery justifiable. *Secondary implication of joints, non-union of the broken bones, and exhaustion from profuse suppuration*, are also circumstances each of which may occasionally render imperative a resort to amputation. Removal of the limb is also sometimes desired by the patient at a later period, on account of deformity, atrophy, liability to ulceration, etc. The surgeon should not under such circumstances at once consent to operate because his patient wishes him to do so, but

"must determine, by a careful examination of each individual case, whether the extent of disease, pain, incapacity for business, and inconvenience suffered, are sufficient to call for a resort to this extreme measure."

We cannot close this volume without congratulating the surgeons of America, and more especially of Philadelphia, upon its publication. *PHYSICK*, and quite recently *BARTON*—perhaps the brightest names in the annals of Philadelphia Surgery—have gone from us, leaving no record of their work save in old numbers of journals, or in the occasional references found in the writings of others; let us be thankful that in the pages of this volume there has been set up, while its distinguished author is still in our midst, an enduring monument which will worthily honour the name of *NORRIS*, so long as the Art of Healing itself shall survive.

J. A., JR.

ART. XIII.—*The Pathology, Diagnosis, and Treatment of Diseases of Women, including the Diagnosis of Pregnancy.* By GRAILY HEWITT, M.D. Lond., F.R.C.P., Professor of Midwifery and Diseases of Women, University College, and Obstetrical Physician to the Hospital, etc. etc. Second American from the third London edition, revised and enlarged. 8vo. pp xxii., 751. Philadelphia: Lindsay & Blakiston, 1872.

Clinical Lectures on Diseases Peculiar to Women. By LOMBE ATTHILL, M.D., University of Dublin, Obstetrical Physician to the Adelaide Hospital, Dublin, etc. etc. Second edition, revised and enlarged. 12mo. pp. xv., 241. Philadelphia: Lindsay & Blakiston, 1873.

THAT Dr. Hewitt's work has reached its third edition in England and its second in this country, fully attests its value, and shows that there is a demand for it by the profession. The same is true of Atthill's *Clinical Lectures*, the first edition of which was published in 1871, and shortly afterwards reissued in America, and now a year later a second edition is called for, and issued nearly simultaneously in both countries.

Dr. Hewitt's book has undergone radical alterations, both in its arrangement and in the doctrines which it advocates. The former was very desirable, as the author's plan detracted from the value of the book as a work of reference. This is, to a certain extent, true of the arrangement of the present edition, but it need not claim further attention.

Of much more importance is the change of doctrine which our author enunciates. For years past it has been too evident that the tendency of gynecologists was towards a mechanical explanation and treatment of the diseases peculiar to women. That this is true, is proved by the innumerable varieties of instruments that form the armamentarium of him who practises this branch of our profession. With a host of specula and probes for their examination; with redressers, knives, scissors, tents, and numberless bandages; with pessaries, vaginal and intra-uterine, the gynecologist has been moving about among his patients, and endeavouring to relieve their ills. If he has found his instruments insufficient, our author has added to his list, and if he wants support for his mechanical doctrines and treatment, our author furnishes it. Dr. Hewitt is a firm believer in the utility of pessaries, but in this it must be admitted that he is perfectly consistent, since he almost ignores the existence of any uterine disease excepting displacements. This constitutes the peculiarity of this edition of his book, and the reader cannot but be struck with the absence of anything in relation to inflammatory diseases. What he calls the mechanical system of uterine pathology is put forward earnestly, and urged by the author with all his force. The fact that this was not done until the book has reached the third edition, and that this opinion is based on "daily observation for four or six years past" (preface), makes it necessary for us to examine Dr. Hewitt's views somewhat critically.

He publishes in his first chapter an analysis of 813 cases (page 5) which came under his observation at the University College Hospital, from August, 1865, to December, 1869. Of these, 99 may properly be excluded from consideration, 60 being cases of pregnancy, and 39 being sufferers from "ailments or discomforts of pregnancy." Of the remaining 714 women, 377 were suffering from displacements. Of these, 184 were anteversions or flexions, 112 cases of retroflexion, and 81 had prolapsus, while inflammatory diseases of the uterus proper do not appear in the list. In other words, rather more than 50 per cent. of all the women who suffer from diseases peculiar to their sex are the victims of some form of displacement. Of these, according to our author, flexions and versions are the most important, there being 296 cases of these to 81 of "prolapsus of the uterus, vagina, etc." Inflammation of the organ is ignored, except as a consequence of these displacements, though, as such, our author says that it exists frequently enough. In this, his doctrine is in striking contrast to that of Dr. J. Henry Bennett, who as positively asserts that the displacement is the result of inflammation, and that, if unaccompanied by this, it produces no symptoms. These two authorities may be taken as fair exponents of two rival doctrines of uterine pathology, both of which have been more or less fully promulgated since the famous debate upon this subject in the Academy of Medicine at Paris, in 1864.

The radical differences of these opinions prevent their being harmonized, and one is almost lost in despair when he remembers that both appeal to personal experience to support their views. Bennett asserts, in his work on the uterus, that he has frequently seen version or flexion of the organ which produced no symptoms, and that when he had conquered the

inflammation, the uterus either regained its normal position, or, if still displaced, ceased to produce trouble. Hewitt, on the other hand, replaces the womb, restores the impeded circulation, and removes the compression of the nerves by his mechanical support. It will not do to assert that either of these gentlemen has erred in diagnosis. Hewitt's table is particularly valuable, since he examined all his patients himself, and states that he is personally and individually responsible for the accuracy of his facts.

In this connection, one point deserves consideration. The cases tabulated came to a hospital and clinic for diseases peculiar to women, and were therefore presumably suffering from some disorder. Our author nowhere mentions that he has at any time examined healthy individuals, and we all know how easy it is to conclude that a certain local condition and a coexisting group of symptoms bear to each other the relation of cause and effect. In order to clear up this uncertainty, it is necessary to examine the genital organs of a number of healthy women. A few persons have had the opportunity to pursue these investigations in lock hospitals and in the venereal wards of general hospitals. The writer has repeatedly examined prostitutes in the wards of the Philadelphia Hospital, whose uteri were flexed, and who had never suspected that they had uterine disease, and who would not admit that they had any symptoms of these disorders. Mr. Paul Dubois long ago called attention to the same fact, and it has been corroborated by the investigations of Goupil at the Lourcine Hospital at Paris. (*Clin. Memoirs on Dis. of Women*, Syd. Soc. Ed.)

These conclusions, as well as those of Dr. Hewitt, are the results of personal observation and experience; but they are more important, because they were reached after the examination of women who were not known to be suffering from uterine diseases. The conclusion that versions and flexions of the uterus may exist without producing any symptoms cannot be avoided, nor is it less rational to believe that the morbid phenomena which attend these displacements are often the result of the accompanying congestion or inflammation, which follow as the almost inevitable result of these, when they are acquired. In these cases every practical gynecologist knows to what extent the fundus uteri will enlarge, how tender it will become, and in some instances what are the results of pressure upon the neighbouring organs. It is not more difficult to see how congestive or inflammatory diseases of the uterus lead to displacements.

The incorrectness of the mechanical pathology of these affections is constantly illustrated by the results of treatment. The follower of Dr. Hewitt will find that the simple reposition of the uterus, and maintaining it in position by one of the various modifications of the pessary, which our author advocates, will frequently fail. When the displacement has been produced suddenly, and the instrument has been fitted before the secondary congestion or inflammation has led to any permanent changes in the tissues of the uterus, the pessary may "act like a charm," and speedily cure the patient. If the case have progressed further, however, experience has demonstrated that these mechanical contrivances, which our author so earnestly advocates, may do harm rather than good.

The truth here, as in most other things, seems to be on the middle ground. If the pessary can be worn with comfort it may support the displaced organ, and, by removing pressure from the nerves and blood-vessels, aid in the treatment of the inflammation. As such it is an adjuvant never to be disregarded. On the other hand, the organ may be so tender that inflammation will have to be partly subdued before the physi-

cian can avail himself of this mechanical assistance. If Dr. Hewitt will allow himself to be uninfluenced by any peculiar dogma or preconceived opinions, we cannot but believe that bedside observation will show him that the views just enunciated are correct, while the mechanical pathology, though containing some truth, is in the main incorrect, and leads to dangerous conclusions in regard to treatment. How our author can shut his eyes to these facts it is impossible to tell, and it is equally strange that he fails to recognize that his countrymen have cured these displacements by disregarding them entirely and treating the accompanying inflammation. The writer has observed the same thing, and it would be illogical to conclude that Dr. Hewitt's patients are peculiar or in any way different from those of his professional brethren. A striking example of the influence of flexion recently came under our observation in a patient who was under the care of our colleague, Dr. Girvin, of the Presbyterian Hospital of Philadelphia. The woman had travelled a long distance to be cured of extreme ante flexion of the uterus, the result of inflammation. Pessaries, including the one devised by our author for this displacement, were faithfully tried, not only without affording any relief, but rather to the injury of the patient. Dr. Girvin then abandoned the mechanical treatment, and, by local depletion and intra-uterine medication, straightened the uterine cavity in a short time. Such cases are peculiarly instructive.

Perfectly consistent with his mechanical pathology, Dr. Hewitt abandons the classification of cases of dysmenorrhœa which was adopted in the last edition of this work. That his views are in a great measure correct cannot be denied, but they are too exclusive. One of the worst cases of dysmenorrhœa, which the reviewer has ever seen, was unattended by any uterine displacement save possibly a slight descent of the organ in the cavity of the pelvis. The womb was inflamed, the lining membrane intensely vascular, and the internal os so relaxed that a large sound was passed with the greatest facility. The discharge at her periods was profuse, and was attended with the most excruciating dysmenorrhœal pain. Whether this was owing to the profuse flow of blood, its retention and coagulation in the enlarged uterine cavity on account of the rapid discharge, or whether its passage from the uterus was impeded by spasmodic contraction of the fibres about the internal os, we shall not attempt to decide, but the practical fact remains the same, that dysmenorrhœa does not always have its origin in mechanical obstruction from flexion. This, however, does not vitiate the conclusion that our author has done a good work by insisting upon the importance of flexions as a cause of dysmenorrhœa in contradistinction to deficient size of the external os. Although many authors still adhere to the opinion that the latter is the seat of obstruction, we confidently believe that a more careful examination of the subject will prove that the flexion is a much more frequent cause.

In accordance with the same mechanical pathology, Dr. Hewitt has advanced a new doctrine in relation to the association of nausea and vomiting with uterine flexion. This he first promulgated in a paper, read before the Obstetrical Society of London (*Transactions*, vol. xiii. p. 103), in which he stated that the vomiting of pregnancy is due to flexion of the gravid uterus. This opinion is reasserted in the present edition of his book, and it is further stated that nausea and vomiting, as a symptom of uterine disease, has its origin in the same condition of the unimpregnated organ (page 430). Those who have read the discussion which followed

the presentation of his paper, remember how this proposition was met by the Obstretrical Society of London. The weight of authority and experience was thrown against Dr. Hewitt. Immediately afterwards the writer of this review began to study this subject, and examined a number of women, victims of the nausea of pregnancy, and he can only say that he made no observations which would confirm the statements of Hewitt.

In relation to the association of these symptoms with uterine disease the matter is somewhat different. The author says (p. 431):—

“Every case of flexion is not attended with nausea and vomiting, but in a considerable number of cases these symptoms are present, more or less in marked degree. The general rule on the subject is that in cases of ante flexion the nausea or tendency to vomiting is rather commonly observed. Also, it is found that aggravated cases of retroflexion afford the most aggravated instances of nausea and vomiting, though these extreme degrees of retroflexion are not necessarily, by any means, attended by such vomiting.”

That there is an association between uterine disease and irritability of the stomach is a well-established fact, and, we believe, it is true that this symptom is more frequently connected with flexions than with other, and especially inflammatory, diseases of the uterus. But we cannot agree with the author that this tendency “is rather commonly observed” in ante flexion. On the contrary, we have not only met with the worst cases of it in retroflexion, but have more frequently seen it associated with this displacement than ante flexion.

The connection between the two was forcibly illustrated by a young lady who was under the writer's care last fall. She had always been in perfect health until about three months before, when, although married and childless, she had an abortion induced at the end of the second month. She did not lie in bed a single day. Shortly afterward she began to complain of dragging pains in the back and pelvis, dysmenorrhœa, nausea, and vomiting. Several physicians treated the condition of the stomach, and one made local applications to the uterus without any relief. When she came under our care she was in bed, emaciating rapidly, and we really entertained her own fear that she should starve to death on account of the irritability of the stomach. Upon examination the uterus was found sharply retroflexed and enlarged, but the fundus was not tender, and the os and lining membrane appeared to be healthy. The position of the organ was restored, and it was kept in place by the closed lever of Hodge. This truly “acted like a charm.” Magic could have wrought no such wonder. The next morning our patient was out of bed; the nausea and vomiting had gone and never returned; she rapidly regained flesh, and, when seen again, a few months later, she was a handsome blooming woman.

Such cases make a strong impression upon a physician's mind, but they illustrate the exceptions, not the rule. In other cases of retroflexion the pessary has worked no such marvellous cure; indeed, we have been forced to abandon it, while our patients improved just in proportion as the inflammation of the fundus was diminished. Here, too, the author claims too much for his mechanical pathology. It contains some truth, but much that is unsound.

These are the principal changes in the present edition of this work. We close the book with keen regret, for, notwithstanding his vagaries, we have always admired the author. This very feeling makes it more painful to say that we regret that this edition has been published. It will not add to the reputation of the eminent professor at the University College, and

the ex-President of that honourable body, the Obstetrical Society of London; but, on the contrary, it proves its author to be like the quarrelling knights in the old story of the shield by the wayside. He can see but one side at a time, and he unfortunately affords us another illustration of how men, good and true, allow themselves to be carried away by a single idea. Such examples as this make us wonder if the old fact, that truth does not lie in extremes, but in the middle ground, will ever be generally recognized.

In the present edition of Dr. Atthill's work he reiterates his views in relation to the use of nitric acid applied to the interior of the uterus.

The chief addition to the work is a chapter upon "Enlargements of the Uterus," which will well repay careful study.

J. S. P.

ART. XIV.—*Skin Diseases: their Description, Pathology, Diagnosis and Treatment.* By TILBURY FOX, M.D. Lond. Second American, from the third London edition, rewritten and enlarged, with a Cutaneous Pharmacopœia, a Glossarial Index, and sixty-seven additional Illustrations. 8vo. pp. xiv. 532. New York: Wm. Wood & Co., 1873.

IN place of the moderate-sized volume of some three hundred pages which we have been accustomed to look upon, we have now before us a large, handsome octavo almost double in size. Not only are decided alterations in the text everywhere to be noticed, but we also observe the introduction of a large amount of new matter, as well as numerous illustrations, which constitute a new feature in the book. The original volume, indeed, has undergone such radical changes that the present edition must almost be regarded in the light of a new treatise.

The author states that the work has been written to meet the wants of the practitioner in his daily dealings with disease, and at the same time to serve as a text-book for the student. He has succeeded well in his purpose, we think, and has produced a most excellent book, one which will be of great service to the student and also to the profession at large.

The introductory remarks are well selected, and give at once a healthy tone to the volume. Our author says:—

"He who would be a successful dermatologist, I have always held, and hold more strongly than ever, must also be a proficient in the principles of general medicine. The successful study of skin disease necessitates a knowledge on the part of the student, whoever he may be, of diseases in general, and he alone can treat cutaneous ailments satisfactorily who is master of the details of general therapeutics. The same disease, as it occurs in persons of different diathetic tendencies, requires to be handled in a somewhat varying manner. Eczema, for instance, in an old and gouty, a young and pallid, or a scrofulous subject, requires not the same, but modified treatment to meet the circumstances of each particular case. The rank specialist or mere empiric would diagnose the eczema, pay no heed to the diathesis, and employ a therapeuté, which he has stereotyped as suited to eczema under all conditions. The philosophic practitioner, bringing into use his knowledge of medicine in general, would be careful to take advantage of known specifics; but he would treat any constitutional condition which tended to aggravate the main disease or to prevent reparative action; and he would rectify errors of function or departures from healthy action in organs and parts which, bearing relation by interdependence of function, thereby influence for evil the already diseased skin."

Such views as these carry with them sound doctrine, which, in our estimation, cannot be too often or forcibly repeated.

The chapter devoted to the mode of studying skin diseases is one of the best in the book, and abounds in original ideas. Our author here lays down a number of rules for study, which, if observed, will greatly facilitate diagnosis and enable the student to come to at least a rational conclusion as regards the case at hand. These few pages contain excellent advice clothed in plain but clear language. The following remarks are deserving of widespread dissemination, expressing, as they do, facts which are neither generally known nor fully recognized. Extensive international travel, together with a free interchange of experiences on the part of dermatologists, have done much within the last few years to clear away the mystery in which certain diseases were enveloped. Dr. Fox remarks:—

“There are differences in the same disease, as seen in this and other countries, as well as a distinction to be drawn between the several kinds of cutaneous affections occurring in England and abroad. For instance, the lichen ruber of Hebra is rarely seen in England, and not only less frequently, but also not in such a marked form as in Vienna. Lupus in Vienna is, on the whole, a much more severe disease than in England. Again, the prurigo of Hebra does not occur in England, save as the greatest rarity. It would seem too, that it is not the same severe disease here in external characters and behaviour. Parasitic sycosis is common in France, rare in England and Vienna. Psoriasis is infinitely more common in England than elsewhere, and urticaria in America, and so on. I lay much stress on the fact that differences in the same disease are seen here and abroad, and for this reason: That I wish it to be understood that the descriptions given by foreign writers of skin disease, whilst, in the main, they apply correctly to English skin diseases, yet vary in many important particulars, and, unless the student realizes this fact, and many do not, he will be sure to be confused in his reading. Conversely the descriptions given by English authors will not represent accurately the characters of diseases as seen abroad. There is, indeed a nationality of disease as well as of character or physique.”

After a short chapter upon the anatomy of the skin, introduced into the work for the first time, wherein the recent studies of Biesiadecki are followed, our author offers some remarks upon the general pathology of the skin, including a description of elementary lesions. He prefers the clinical to the pathological system of grouping, considering that the purely histological standard-point cannot yet be adopted for classification, and that the etiology, clinical history, character, and course of skin diseases must be taken into consideration. The following plan is proposed:—

1. Eruptions of the acute specific diseases (zymotic).
2. Local inflammations, comprising urticaria, eczema, psoriasis, etc. etc.
3. Diathetic disorders, including syphilis and leprosy diseases.
4. Hypertrophic and atrophic diseases, under which head are included ichthyosis, keloid, etc., and the atrophies.
5. New formations including cancer and lupus.
6. Hemorrhages.
7. Neuroses, as pruritus, etc.
8. Pigmentary alterations.
9. Parasitic diseases.
10. Diseases of the glands and appendages, including lichen tropicus, seborrhœa, acne, etc. etc.

The zymotic diseases are summarily discussed, short descriptions alone being given of the eruptions themselves for purposes of diagnosis. The disease called *Framboesia*, or *Yaws*, here receives considerable attention, more, perhaps, than we should expect, considering that it does not occur in England. It is, however, a disease about which there has been much discussion of late, and the paper, strengthened by recent information, is interesting. The affection is also called *mycosis* and *pian*, and is almost

entirely confined to the African race. The testimony of the present day is against its being connected with syphilis, as was formerly supposed.

Under the head of Plastic or Papular Inflammations our author includes the Lichens, Strophulus, and Prurigo. Of the first he makes three forms, *L. simplex* (the *Eczema papulosum* of German and American writers), *L. planus*, and *L. scrofulosorum*. Lichen planus, a form of disease encountered and accurately described by Erasmus Wilson and so named by him, is considered to be the same disease as the Lichen ruber of Hebra, showing itself in England, however, in a milder form than in Austria. This is an important observation, and seems to be fully corroborated by the experience of Dr. Fox, he having met with several cases of the severe *L. ruber* of Hebra as well as a number of cases of *L. planus*.

Another disease in which our author has especially interested himself of late, and for which study special thanks are due, is prurigo, about which the greatest confusion has heretofore existed in England. He has done English dermatology a great service by disentangling this disease from the numerous other conditions with which it was continually confounded by English writers. Dr. Fox gives the following lucid description of the affection:—

"This disease is essentially a chronic inflammation of the skin, which expresses itself in the first place by the development of peculiar papulæ, and subsequently general thickening of the skin, and moreover, by intense pruritus at every stage of its course. It is a very uncommon disease in England, emphatically so in its severest form, which is seen pretty often in Vienna. I have been on the lookout for a case of the most marked form of disease, such as Hebra describes, for years past, and have only met with one case in England. In describing prurigo, it is most necessary to state *what prurigo is not*, for the reason that the word prurigo has been applied to several entirely distinct diseases in the loosest manner possible, and there is an abiding desire to rank under it diseases the most diverse *en masse*. I will, therefore, give in detail the characters of true prurigo, and then enter into particulars relative to the various diseases that have been and are likely to be confounded with it. The disease, I may say here, is not phtheiriasis (prurigo senilis of older authors). Prurigo occurs in two forms, a slighter and a severer form, to which the terms *mitis* and *ferox*, or *agria*, may be respectively applied. Prurigo *mitis* is characterized by the development of flesh-coloured papules, *in an isolated and scattered form*, of the size of a couple of pins' heads put together, or a little larger. These papular formations are attended by intense pruritus, which induces the patient to scratch and to excoriate the papules, which then become covered at their apices by dried blood-scales. Sometimes the papules are very deeply excoriated. There are also papules to be felt rather than seen on the skin, and if the finger be passed over the affected part they feel shotty and hard. . . . The eruption, therefore, consists of certain papules, altered by scratching, and accompanied by intense itching, as *primary* and essential phenomena."

Prurigo *ferox* is next described, our author judiciously accepting Hebra's description for his text. This form of the disease is very rarely encountered in either England or America.

Dr. Fox divides eczema into three varieties; *E. simplex*, localized and without appreciable general symptoms; *E. rubrum*, more or less general and inflammatory in its attack, as regards not only its local inflammatory phenomena and implication of the deeper tissues, but the disorder of the system generally; and *E. impetiginodes*, in which the pus formation is not accounted for by the degree of inflammatory action. Eczema is regarded as a catarrhal inflammation of the skin, having its analogue in catarrhal inflammation of the mucous membrane. Great stress is laid upon this view, though we confess to being unable to see why it should be con-

sidered of such importance. Our author holds that the main feature of eczema is the presence of a peculiar discharge, which dries into thin yellow crusts. However long-standing the disease may be, it will always furnish evidence in its history of the fact that it has been moist at one time or another. Such being the case, the dry *E. papulosum* of writers is not admitted to be an eczema, but is placed under the head of Lichen, just where Willan arranged it. This view, which the author clings to tenaciously, we consider unfortunate, for it seems to us to be in opposition to all the most recent researches as well as clinical experience. Dr. Fox is one of the few writers of the present day who still holds to the old ideas concerning the division of eczema.

Our author is by no means settled in his views concerning the nature of impetigo contagiosa, a form of disease first described by him. As is well known it has been asserted by some that the disease is one of parasitic origin; but Dr. Fox does not accept this theory as a cause of the trouble. The whole character of the disease, he maintains, with its febrile disturbance, its vesico-pustular aspect, the definite course of each vesico-pustule like that of an herpetic vesicle, is utterly unlike the course of a parasitic affection. Though a well-known disease, and readily amenable to treatment, its nature still remains obscure.

Under squamous inflammation we are to include two diseases, pityriasis rubra and psoriasis. Our author describes the first of these, pityriasis rubra, with a free pen, and speaks of having often encountered the disease. It is a rare affection, according to the experience of most dermatologists, and one whose record as a primary form of disease is by no means clear. It is for this reason that the following account of it will prove interesting:—

“Pityriasis rubra is a primary form of disease characterized essentially by general hyperæmia of the superficial parts of the skin, and hyperplastic growth of the cuticular layer. The disease commences oftentimes in those who have had a good deal of mental anxiety, or who have been working laboriously, and the first signs are redness and scaliness in some parts of the body. Presently the patch begins to extend, and then the surface of the whole body speedily becomes, within a fortnight or so, hyperæmic—of a deep red colour, which is lessened by pressure, and is accompanied by constant exfoliation of branny lamellar scales, but without any exudation or infiltration of the skin, or any discharge at all from it. The sudden development of the disease, and the way that it spreads, so as to implicate the entire body, are very characteristic. The developed disease varies but little in aspect during its whole course. The patient sometimes does not complain of much inconvenience in the way of itching, but I have generally found that patients are tormented by “burning heats.” The desquamation, when the disease has fully developed, may be very free and extensive; the whole cuticle of the hand may peel off *en masse*, as it were, and the amount of scales shed day by day may be prodigious. About the arms especially the scaliness may be markedly imbricated in regular order, like the tiles of a house, the white fringing presented by the edges of the flakes contrasting with the red hyperæmic surface exposed beneath the white flaky masses. The nails, one or even all, may be shed.”

Dr. Fox believes that the disease consists in an hyperæmia of the upper layer of the cutis, involving its longitudinal plexus of vessels, with hypertrophy of the cuticle. Secondary hypertrophy of the fibro-cellular textures may follow in the latter stages of the disease, but this he does not believe to be a necessary part of the disease. He denies emphatically any connection between the affection and eczema.

The chapter upon Leprosy, or Elephantiasis Græcorum, is very complete. The author's experience with this disease in the East and elsewhere, renders his views particularly valuable. The various forms of treat-

ment which have been recommended, including the method of Dr. Beaupérthuy, are carefully considered, and the conclusion arrived at that, by means of strict hygienic measures, in connection with fresh meat and other articles of diet, much can be done for the patient's relief.

Under the name Fibroma Fungoides, Dr. Fox describes a form of fibroma of which he has seen four examples. It differs from fibroma moluscum in that it has a tendency to ulcerate, showing at the same time great vascularity. A synopsis of these four cases is given, but the histories are too short and incomplete to allow of any opinion being formed by the reader as to the nature of the disease. A remarkable wood-cut accompanies one of the cases, which certainly represents a very curious form of disease. The account of the neuroses of the skin, under which head our author comprises hyperæsthesia, anæsthesia, and pruritus, is short and rather unsatisfactory.

The diseases due to vegetable parasites are grouped together, and called by the generic term tineæ. Ten parasitic diseases are described, several of which, it appears to us, might have been omitted, inasmuch as they are not diseases, but forms which the same fungus assumes in different parts of the body. We refer to disease produced by the trichophyton.

We notice with some surprise that our author still adheres zealously to the idea of there being a fungus in connection with the affection alopecia areata, or tinea decalvans, as he calls it. The supposed fungus of this disease is here shown by several well-worn wood-cuts, which unfortunately exhibit nothing distinctly. One of them shows absolutely nothing, being simply a complete blur, with no sign of anything like fungus, while the other portrays a part of a hair with spores, magnified less, probably, than a hundred diameters, yet the spores being represented as large as those of the trichophyton with a power of two hundred diameters. Now, when we are informed that the spores are from $\frac{1}{25000}$ to $\frac{1}{5000}$ of an inch in size (*very much smaller* than the trichophyton, these being estimated at about $\frac{1}{5000}$ of an inch), it is manifest that there is a great discrepancy in the proportion of the size of the hair and the spores upon it. To say the least, the drawing is a poor one, and would mislead, supposing fungi to be present. We should be pleased to agree with the author in his conclusions concerning the nature of this disease were sufficient proof presented; but in the paper before us we fail to find this proof, or, indeed, any new investigations which tend to the support of the microsporon Audouini.

The latter part of the book bears evidence of haste in its preparation, some of the chapters being too short to do full justice to the subject. Diseases of the nails, for instance, receive but one page, while acne is disposed of in four.

As before alluded to, the work is illustrated with drawings of pathological conditions, borrowed almost exclusively from the works of Neumann, Biesiadecki, and Auspitz, though in point of execution scarcely up to the originals. We are pleased to observe their introduction, however, into the present volume, for they are well selected, and also serve as a friendly recognition on the part of English dermatologists of those who have accomplished so much in their specialty.

In conclusion, we cordially recommend this book to those who may desire to become acquainted with the modern views of cutaneous diseases. It is the only treatise upon skin diseases, penned by English hands, which gives any idea of the strides dermatology has made within the last ten years.

L. A. D.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XV.—*Guy's Hospital Reports*. Edited by C. HILTON FAGGE, M.D., and ARTHUR E. DURHAM. Third series. Vol. XVIII. 8vo. pp. xviii., 502. London: J. & A. Churchill, 1873.

THE contents of the present volume of this valuable series equal in variety and interest those of its many predecessors. Among the contributors to it are Drs. Wilks, Moxon, Hilton Fagge, and Habershon, and Messrs. Cooper Forster and Bader, all of whom are well known as writers. In accordance with our custom, we shall lay before our readers abstracts of the most important papers, and shall first call attention to those on medical subjects.

On Acute Dilatation of the Stomach; by C. HILTON FAGGE, M.D.—Although chronic dilatation of the stomach, whether dependent or not upon obstruction at the pylorus or in the small intestines, is a condition which has long been recognized. Dr. Fagge thinks that up to the present time its physical diagnosis has not been carefully studied. It would be a great mistake, he says, to suppose that an enlarged stomach differs from the healthy organ, simply in occupying a larger part of the abdomen. On the contrary, a constant feature of these cases is that the organ is greatly displaced downwards; the gastro-hepatic omentum, the lesser curvature, and the cardiac extremity of the stomach, being all much elongated. Hence, instead of the dilated stomach forming a prominence in the epigastrium, that region is more or less deeply hollowed, whilst below the umbilicus one may observe a large rounded tympanitic swelling. But, he continues, the most distinctive feature of dilatation of the stomach in these cases, and that which enables the exact position of the organ to be most accurately determined, is afforded by the peristaltic movements of its muscular coat. These usually begin near the left costal cartilages, descend below the umbilicus, and after passing over to the right, terminate by ascending more or less towards the right hypochondrium. The movements of the small intestines, so frequently seen in cases of chronic intestinal obstruction, present very different characters; and in the transverse colon direct peristalsis would produce a wave passing from right to left, or in the reverse direction to that which has been described as belonging ordinarily to the gastric contraction. It must, however, be remembered that in both forms of disease, anti-peristaltic movements may and do occasionally take place.

Acute dilatation of the stomach, although occurring oftener than is perhaps suspected, is a very rare affection, Dr. Fagge having been able to collect only four cases. One of these he saw in consultation, another was treated by Dr. Rees in *Guy's Hospital*, the third is recorded in the fourth volume of the *Transactions of the London Pathological Society*, and the fourth is reported by Dr. Bennett in his work on the *Principles and Practice of Medicine*. The first is especially interesting, because the diagnosis was fully made, and the proper remedies applied during the life of the patient. He was a young man, eighteen years of age, of tall but spare frame, and although until fourteen days before he was seen by Dr. Fagge, he had been in the enjoyment of his usual health,

he was probably not possessed of a very robust constitution. Upon examination the abdomen was found to be greatly but not uniformly distended. For while the whole of the lower part of the belly was full and rounded, and the left hypochondrium was equally so, the right hypochondrium was flat, or even slightly hollowed. The separation between the rounded and flattened region was indicated by an oblique line descending downwards and to the right from the upper part of the left hypochondrium. Every time the patient breathed, this line could be seen to descend a little. The principal symptoms were constant vomiting of a greenish liquid, as much as a pint being brought up at a time, and pain in the abdomen. There was a tendency to constipation, and to suppression of the urine. The symptoms were relieved at first, but afterwards returned in full force; the vomiting, however, again ceasing before the patient was visited by Dr. Fagge, who at once came to the conclusion, that whatever the original disease might have been, his distress was then mainly caused by dilatation of the stomach, and that this organ contained a large quantity of fluid, but was paralyzed from over-distension, and unable to rid itself of its burden. He therefore determined to use the stomach-pump and empty the stomach, feeding the patient for a few days by nutrient enemata, and in this way giving the organ complete rest. The tube of the stomach-pump was accordingly introduced, and as soon as it had entered the stomach a few ounces of fluid, similar to that previously vomited, were ejected through it with considerable force; and when the pump was put into action, seven pints more were removed. The effect of the operation upon the contour of the abdomen was very marked, and together with this there was complete relief from pain. The improvement was unfortunately only temporary, for two hours and a half later the patient died. At the autopsy the stomach was found only moderately dilated, but when it was pulled down by means of the omentum, it could be made to come considerably below the umbilicus. A little patch of lymph was discovered at one spot on the peritoneum, passing from the large bowel to the mesentery of the small intestine. During the necessary manipulations, the serous membrane gave way at this spot, and a thin fetid fluid with air exuded. This was found to come from a large cavity situated behind the ascending colon, gall-bladder, and other parts, all of which were fixed together by firm fibrous adhesions of old date. A finger passed through the pylorus went straight into this cavity, and it was at first supposed that the whole calibre of the second portion of the duodenum had sloughed away. Subsequently, it was found that the duodenum passed down on the inner side of the cavity. Besides a considerable quantity of fetid fluid, the cavity contained a large-sized slough, some inches long, apparently the remains of a mass of connective tissue. Dr. Fagge apparently attaches very little consequence to this lesion, but it is impossible to conceive that it was without an important bearing upon the result of the case.

In the other three cases the enlargement of the stomach was much more considerable. In the case reported by Dr. Rees, "when the abdomen was opened the stomach was almost the only organ visible. The stomach passed from the under surface of the diaphragm downwards as far as the pubes; an oblique line traced in this direction, was found to measure thirteen inches. The organ then bent sharply upwards to reach the under surface of the liver, where the pylorus lay in its natural position; a line traced obliquely upwards from the lower end of the other line at the symphysis pubis, measured eight and a half inches."

Dr. Fagge, from a careful study of the four cases reported in this paper, thinks the following conclusions justifiable: 1. Acute dilatation of the stomach

may arise in young subjects, in whom that organ has previously been apparently healthy. The actual progress of enlargement is more or less gradual; but it produces at first no symptoms, and when these occur they are hidden in their onset, and of great severity, and may destroy life in a few days. Acute dilatation of the stomach may be the only disease found in the body after death, as it may have supervened upon some other morbid change in the alimentary canal. 2. Its signs are, (a) a rapidly increasing distension of the abdomen, which is unsymmetrical; the left hypochondrium being full, while the right hypochondrium is comparatively flattened; (b) The existence of a surface-marking descending obliquely towards the umbilicus from the left hypochondrium, and corresponding to the dropped-down lesser curvature of the stomach, this line appearing to descend with each act of inspiration; (c) The presence of fluctuation in the lower part of the abdomen; (d) The occurrence of splashing when the distended part is manipulated; (e) The presence of an uniformly tympanitic note over a large part of the distended region when the patient lies on his back. Above the pubes, on the other hand, there may be dulness on percussion simulating that of a distended bladder. 3. Its symptoms are those of severe abdominal disease, without evidence of peritonitis or lesion of the intestines. There is very profuse vomiting, so that several quarts may be evacuated in the twenty-four hours. After a time, however, vomiting may cease entirely, the stomach being paralyzed, and unable to rid itself of its contents. There is no absolute constipation, although the bowels may be more or less confined. The urine is scanty. 4. After the removal of the stomach from the body, and the escape of its contents, it may shrink back to its natural size, no matter how great its previous enlargement, and the only remaining indication that it had undergone extreme distension, may be the presence of slight lacerations of its coats.

The treatment which he recommends is that which he adopted in the case which has been so fully referred to in this notice.

In the case reported by Dr. Bennett, the patient a few days before his death swallowed two or three bottlefuls of effervescing lemonade, and the dilatation of the stomach was believed to have arisen from the sudden disengagement of a large quantity of gas. No cause is assigned for the occurrence of the condition in the other three cases. In two of the cases *sarcinæ* were discovered in the matter vomited in greater or less number. In both these instances numerous ecchymoses were found in the mucous membrane of the stomach, a fact of some interest as bearing upon the opinion lately advanced, that, instead of being vegetable organisms, *sarcinæ* arise from aggregations of blood disease.

A Case of Patent Ductus Arteriosus; by C. HILTON FAGGE, M.D.—In volume sixteen of the present series of these Reports, Dr. Fagge describes a case in which a murmur was audible different in character from any bruit he had ever before heard. Two views as to its cause suggested themselves to his mind—one that it was due to a communication between the aorta and the pulmonary artery; the other, that it was a modification of an auricular systolic murmur. Last year the patient returned to the hospital and died there. On post-mortem examination it was found, that the only lesion to which the peculiar bruit could be attributed was a patent ductus arteriosus. The peculiar features in the case were extreme slowness of the pulse, and the presence of a wavy, partly musical murmur, audible at the second left costal cartilage, extending considerably to the left of the sternum along the cartilage, not carried along the sternum downwards, following the second sound, but not everywhere continuous with it, and separated from the next first sound by a considerable interval. Very few cases are on record in which a persistent ductus arteriosus has been believed

to have given rise to a murmur. In the first volume of the *Transactions of the Pathological Society of London*, a case is recorded by Dr. Babington, which is the only one mentioned by Walshe. Prof. Jaksch reports a case in the *Prager Vierteljahrschrift*, for 1862, in which there was a murmur similar to that heard in the case reported in this paper. On post-mortem examination the foramen ovale was patent, as well as the ductus arteriosus.

In some *Remarks on Diseases of the Nervous System, with Cases*, Dr. WILKS complains, that, notwithstanding the light which recent physiological investigations have thrown upon the functions of the brain and spinal cord, we continue to make use of the terms "cerebral" and "spinal" paralysis. Physiologists of the present day regard the spinal cord as consisting not only of that part of the cerebro-spinal axis situated within the vertebral column, but also of the nervous centres from which the cranial nerves take their origin, seated upon its summit. The cerebrum, or brain proper, is the large mass which covers and incloses the upper part of the spinal cord, and which receives impressions from all parts of the body, as well as from the special senses, converts these into perceptions and mental processes, and develops a volitional power which affects the cord below and through this the body at large. Disease of the brain will indeed produce delirium or dementia, but it cannot cause paralysis, which, on the other hand, is caused by any change in the spinal cord. The only exception to this rule (and Dr. Wilks regards it as only an apparent exception) is furnished by those cases in which general arachnitis or the like has, by an interference with the volitional power, been accompanied by a want of movement in a limb.

The author next considers the pathological connection between the nerves and cerebro-spinal centres, saying that there is every reason for believing, that, owing to the direct connection between them, a peripheral portion of the body might be affected from the centre, or, on the other hand, the centre from the periphery, entirely through nervous agency. Several cases are reported and others referred to, in which a local injury resulted in paralysis of other parts. The changes in the nervous centres and in the muscles in progressive muscular atrophy and in locomotor ataxy, are also regarded by Dr. Wilks as dependent one upon the other, although, since the pathology of both these affections is still obscure, it is impossible to say which lesion has preceded the other.

The only nervous disease having an organic cause which the author has not seen counterfeited by a functional disease is contraction or spasmodic affections of the muscle. These diseases, in his experience, constitute the most difficult to explain or to treat in the whole domain of clinical medicine. In some cases he believes them to be due to chronic spinal meningitis, in others to sclerosis of the cord itself. Dr. S. W. Mitchell, in his recent work on *Injuries of Nerves and their Consequences*, has shown that in some cases sclerosis of the nerves of the affected part may also exist. A few pages are devoted to the consideration of "Vertigo and Cerebral Symptoms occurring in Deafness and other Affections of the Ear." This subject is, however, more fully discussed by Mr. James Hinton in a paper "On Labyrinthine Vertigo; sometimes called Ménière's Disease." The paper concludes with some remarks on the Uses of Galvanism.

On Sudden Death from Syncope soon after Labour; by J. J. PHILLIPS, M.D.
—There is a class of cases in which sudden death occurring soon after labour is attributed by Dr. Phillips to fatty degeneration of the heart, which has been set up by the anæmia so often attendant upon pregnancy. The patients whose histories he records were multiparæ, and are described as being pale

and having the external appearances of women in feeble health. In almost every instance there was an antecedent history of breathlessness, either during gestation or labour, and whenever an opportunity of examining the heart microscopically was afforded, the muscular tissue exhibited well-marked fatty degeneration.

"This point" he says, "appears to be one deserving of special notice, and I cannot but think that it was an important factor in the production of the fatal result. I am, indeed, aware that a certain amount of fatty change in the tissue of the heart has not been here commonly noticed in cases of child-bed death; but this degeneration, even if regarded (as it has been) as simply the result of certain blood changes incident to pregnancy, must, I think, when once produced, be looked upon as having more than an accidental relation to the mode of death in these cases of fatal syncope."

The author refers to papers by De Cristoforis, Wilks, Gusserow, and Hecker, in support of his views.

In a paper *On the Dynamics of Epilepsy and Convulsions*. Mr. J. THOMPSON DICKSON advocates the view that all excito-motor affections are the resultants of two factors—the first, loss of cerebral control; the second, an excitant. Both factors, he says, are always present in convulsions, whether the convulsion be local or general, in epilepsy and eclampsia, though the second may be so far wanting as to render the chain of symptoms, as commonly described, incomplete. The cord capable of reflecting excito-motor stimuli under certain circumstances, must be considered as extending from the united thalami optici and corpora striata to the caudal extremity of the medulla spinalis. The normal influence exerted by the cortex of the brain on the excito-motor apparatus is one of control, an influence exerted more or less through the simple agency of volition or will, which presumably is capable of controlling an impulse to most involuntary movements, such normal reflex acts as deglutition and ejaculatio seminis, whose centres of action are out of connection with the cortical gray matter, being of course excepted. The occurrence of local convulsions the author explains by supposing that the power of control (by excision, tumour, abscess, or other means of destruction of tissue) is cut off from a limited area of the brain's surface.

Mr. Dickson thinks that the proximate cause of excito-motor action is to be sought for in some alteration in the circulation of the brain, but he agrees neither with Dr. Marshall Hall, in believing that this alteration depends upon an impeded flow of venous blood from the brain, nor with Mr. Solly, in considering it to be due to an active determination of blood to the head. He holds, on the contrary, that the condition really present is cerebral anæmia. In support of this view he refers us to observations, made in slaughter-houses, where animals are put to death by bleeding, the effect of which is always to produce convulsions before death. This was at first explained by the assumption that muscles contracted spasmodically when deprived of blood, but the fallacy of this opinion has been demonstrated by Kussmaul and Tenner, who have shown that deprivation of the brain of arterial blood by tying the vessels of the neck will produce all the effects as perfectly as, or more perfectly than, depletion. This conclusion has been rendered still more certain by the study of the brain by Donders's method, which consists in inserting an air-tight window into the skull and observing the brain through it. It is then found that on compression of the large arteries of the neck complete anæmia of the brain and its membranes ensues, and this continues until the convulsion begins, when the venous anæmia partially subsides, though the arterial and capillary anæmia is unaltered. Indirect evidence in favour of the same view is furnished

by the blanched anæmic appearance of the face and neck on the invasion of an epileptic attack, which must correspond with the condition within the skull. Moreover, convulsions are produced by the injection of water into the circulation.

The invasion of unconsciousness in epilepsy is always sudden, and it may be explained by supposing that under the influence of some irritant an instantaneous contraction of the smaller arterial vessels takes place. This irritant may be a tumour or an abscess seated within the cranium, or it may be contained in the blood, or may act upon the medulla spinalis from some other part of the body. The author regards the loss of consciousness which takes place in apoplexy as also caused by anæmia of the brain, the extravasated blood in this case acting as the irritant. Niemeyer has long held the view that apoplectic stupor was due to this condition, but he explains its occurrence differently.

Dr. Hughlings Jackson has recently advanced the theory that from the seat of pathological lesions discharges are sent out, which are distributed to certain muscles in the case of local affections, and to the muscles generally in the case of a general affection. Dr. Dickson maintains, on the contrary, that when control over certain muscles is lost or diminished by destruction or injury of a portion of the surface of the brain, involuntary or convulsive movements will occur in these muscles from reflex excitation. The muscles, he says, contain a power of contraction in themselves, irrespective of mandates from the cerebrum, and convulsive movements may be induced in a warm-blooded animal after the whole of the cerebrum has been sliced away.

Mr. JAMES HINTON contributes a paper *On Labyrinthine Vertigo, sometimes called Ménière's Disease*. Under the name of Ménière's disease is described a very numerous class of cases, apparently embracing several varieties, in which some of the symptoms of formidable disease of the nervous centres, especially giddiness, vomiting, and staggering, have their origin in affections of the labyrinth. In the cases comprehended under this title, the nervous symptoms do not depend upon inflammation of the tympanum or of the adjacent parts, which, it is well known, is capable of producing grave cerebral disorders, or upon the pressure caused by accumulations of cerumen or by a foreign body in the meatus which occasionally give rise to symptoms simulating those of cerebral affections. The nature of the lesion of the labyrinth in Ménière's disease is still unknown. In fact the few post-mortem examinations which have been made seem to indicate that it is not always the same. Dr. Knapp, of New York, in an exhaustive discussion,¹ has given it as his opinion that the phenomena of labyrinthine vertigo may be traced in all cases either to hemorrhage or to serous or purulent exudation within the semicircular canals. Several interesting cases of the affection will be found in this paper and others in Dr. Wilks's.

Queries in Theoretical Physiology, No. II.; by JAMES HINTON.

On the Artificial Formation of Organic Substances; by Dr. HENRY DEBUS.

These papers are of more interest to the organic chemist than to the practical physician, and in view of the limited space at our command, we shall not attempt to analyze them.

A Case of Inflammation of the Aorta, causing Contraction of its Ascending Part and Fatal Ischæmia; by WALTER MOXON, M.D.—Three patches of disease of the aorta were found in this case—one situated at the origin of the vessel, another in the commencement of the descending part, and the third near the

¹ "Archives of Ophthalmology and Otology," vol. ii. No. 1, p. 204.

coeliac axis. These patches are said to have had the appearance of a circumscribed eruption, with a tendency to spread with convex edges just like a patch of lupus. The thickness of the diseased part was considerably increased, so that it was five times that of the healthy portions of the vessel, but not uniformly so. A microscopic examination showed that the cells, of which certain yellow spots in the patches were made up, were exceedingly small ($\frac{1}{5000}$ of an inch), and have some resemblance to those of tubercle. Dr. Moxon believes that the disease was originally eruptive, in the sense in which we speak of cutaneous eruptions, and from this and other cases which he has met he is emboldened to express his belief that the coats of the arteries are as liable to inflammatory eruptions as the skin to its eruptive inflammations.

In a paper *On Hospital Dietaries*, Dr. J. C. STEELE compares the diet-tables of the various hospitals in London, not only with one another, but also with those of some of the provincial hospitals. He has evidently fully investigated the merits of each, and we would commend the careful study of the article to those who may be in charge of similar institutions in this country, where we have good reason to believe the diet of the sick is not nearly so well attended to as its importance demands.

Some Cases of Hydatid Disease; by S. O. HABERSHON, M.D.—In the *Hospital Reports* for 1860, Dr. Habershon published several cases of hydatid disease. In this volume he places on record four additional instances, because, he says, they illustrate some of the difficulties in diagnosis, and because they show the importance of early and decided treatment when the nature of the malady is ascertained. In the first case the hydatid appeared to have located itself originally in the lung, where it seems to have given rise to so much irritation as to have caused hemorrhages. During one of these a portion of membrane was expectorated, in which Dr. Moxon detected the plicated foldings of a hydatid cyst. Death in this case was caused by hemorrhage from a vein which opened directly into the cavity left by the hydatid, a lesion which is very well shown in the accompanying plate. The result was more fortunate in the next instance, in which the hydatid cyst was also expectorated. The symptoms indicated that the disease was originally seated in the liver, that adhesive inflammation on both sides of the diaphragm had taken place, and that the cyst had then made its way into the lung. The diagnosis in the third case was more difficult, for even after the hydatid character of the disease was recognized, it was doubtful whether the mischief was located in the kidneys or in the spleen or in the left lobe of the liver. The tumour extended too far into the left loin and into the left hypochondriac region for it to be the left lobe of the liver, but it was more difficult to ascertain whether the kidney or the spleen was affected. The cyst was twice punctured by Mr. Bryant, who drew off on the first occasion thirty-seven ounces of a clear fluid free from albumen, in which Dr. Fagge detected the head of an echinococcus surrounded by a row of hooklets. At the second operation five pints of fluid also containing scolices were removed. A small number of hydatid cysts also came through the canula. The cyst was subsequently washed out with a dilute solution of carbolic acid (2 grains to 4 ounces). The patient finally sank from exhaustion induced by rupture of the sac into the peritoneal cavity. In the last case there was an old hydatid cyst in the liver, which induced perforation of the diaphragm and subsequent pleurisy and death.

The unfavourable termination of most of the instances recorded in this paper, induces Dr. Habershon to believe that if the diagnosis be clear it is a safer plan to withdraw the fluid early than to trust to the possible death of the hydatid and gradual wasting of the cyst, and in cases also where there is

a refilling of the cyst after tapping he regards it as the wiser plan to re-empty the cyst early than to allow suppurative changes to ensue by the indefinite postponement of a second operation.

J. H. H.

Turning our attention now to those papers which are more particularly interesting to surgeons, we meet first with Mr. J. COOPER FORSTER's annual contribution of *Clinical Records*. In the present instalment, Mr. Forster has wisely limited his selection to the more important cases which have been under his care, giving the details of but sixty-three out of nearly four hundred. He has also much increased the value of his pages by adding a synopsis arranged as an index, by means of which reference is easily made to the somewhat miscellaneous contents of his paper. Among Mr. Forster's most interesting cases we note particularly one of innominate aneurism, unsuccessfully treated by distal pressure on the carotid—the patient dying on the sixth day from capillary cerebral hemorrhage; and one of naso-pharyngeal polypus, the removal of which was facilitated by a preliminary osteo-plastic resection of the upper jaw, the bone being displaced *outwards*, instead of inwards, as in Langenbeck's, or downwards, as in Cheever's operation. From Mr. Forster's remarks upon Prof. Lister's "antiseptic method," we select the following paragraphs, which afford what we are disposed to consider a very just estimate of this much-vaunted mode of treatment:—

"During the past year I have tried the antiseptic treatment in many cases in which I thought it could be carried out satisfactorily. . . . To insure the thorough application of this method necessitates the constant attention of the surgeon who has charge of the case, and practically, in a London Hospital, such entire supervision is a simple impossibility. The practice, therefore, becomes virtually placed in the hands of the dressers, and unless these gentlemen take a great interest in improvements, or are not too much occupied with the many cases which almost overburden them during their respective weeks of duty, it is not likely to be taken up warmly by them. Moreover, the thorough method of the application of the dressing is not acquired without considerable practice, and when acquired one's best efforts are often rendered futile by the restlessness of the patients. Hence the measure of my success during the last year has not been what I had hoped for. . . . Whether or not the absence of pyæmia and erysipelas from the wards has been due to the carbolic vapour permeating them, or to the application of the acid directly to discharging surfaces, of course I cannot speak positively, but my impression is that carbolic acid, in whatever form, has had very little to do with the results obtained, and that those curses of surgical practice (erysipelas and pyæmia) have been avoided by greater cleanliness in the wards, and the larger cubic area allowed to each patient. That this immunity cannot be owing to the antiseptic treatment must, I think, be evident from the fact that none of my surgical colleagues, who have charge of the other wards, have used this antiseptic plan, and there has been in their case an equal immunity from erysipelas and pyæmia. . . . Isolated cases of wonderful results, under antiseptic means, are to be met with now and then, but whether on account of, or notwithstanding, the treatment, appears to me to be quite impossible to determine. . . . If the remedy . . . is only available in practised hands, I cannot think it advisable to teach students that it is the one plan of treating all cases of external wounds. My results do not even bear me out in telling them that it is the most advisable treatment to be adopted; it is impossible to compare case with case. In the only very severe accident in which I tried the plan myself, taking every precaution that possibly could be adopted to insure the treatment being carried out in its entirety, I utterly failed to secure a good result."

The next paper to which we shall invite our readers' attention is *On Follicular Disease of the Scalp*; by JAMES F. GOODHART, M.B.

The author refers to papers on follicular disease, by Messrs. Cock and

Birkett, in a previous volume of the *Guy's*,¹ and by Mr. Prescott Hewett, in the *St. George's Hospital Reports*,² and then, dismissing the clinical features of the affection, gives an account of the microscopic appearances observed in two cases under the care of the late Mr. Poland, and compares them with the appearances in a third case, published by Mr. Birkett in the *Transactions of the Pathological Society of London*, and with those in a fourth, known as Chassaignac's and quoted by Mr. Hewett in the paper already referred to. While in their general characteristics the growths in these four cases presented a tolerably complete correspondence with each other, their microscopic peculiarities differed, the first (and probably the last) being of an epithelial character, the second sarcomatous, and the third resembling a gland in its cellular elements. We have not space to follow Mr. Goodhart in his interesting discussion of the different views which have prevailed as to the origin and nature of these follicular tumours or sebaceous cysts, but must content ourselves with transcribing the paragraphs in which he gives a "summary" of what has gone before:—

"There seems to be enough evidence to show, first, that follicular tumours are, in their bare anatomical details, suspicious in their tendencies, and that, inasmuch as their anatomy is an index, rough though it may be, of their life's process, that is to say, of their pathology, from the latter point of view they may still be said to have very close relations to the cancerous or malignant group.

"Secondly, abundant material is at hand to prove, as former writers on the subject have shown, that, clinically, such tumours have not the behaviour of cancers, and if removed they do not return. Pathology and surgery in its clinical aspect would seem at first sight, then, to come into collision; they do not do so in reality. The non-recurrence of the tumour only shows that the regions more especially prone to attack afford opportunities for their complete extirpation, or that allowing of growth which is malignant in its nature, the local peculiarities of the part have been in some way inimical to the extension of the disease.

"It seems almost unnecessary to add that the practice urged by Mr. Cock, in his paper on the subject, as to the advisability of the early removal of the tumour, is very strongly supported by these observations."

Mr. Goodhart's paper is illustrated with two well-executed plates.

The next surgical paper is a *Note on the Operation of Circumcision in the Adult*; by H. G. Howse, M.S. Mr. Howse calls attention to the fact that after the operation of circumcision, as ordinarily performed, a considerable swelling, resulting from inflammatory induration, occasionally persists at the lower part of the penis. To obviate this he says:—

"The remedy which I propose, and which I have been in the habit of using in all my circumcision cases, is the following: After removing the skin in the ordinary way, cut out the wedge-shaped piece of mucous membrane at the *frænum* with a pair of scissors, and then snip the *frænum* cleanly away from the glans, thus removing it and the wedge-shaped bit of mucous membrane in one piece together. Then unite the skin and the mucous membrane in the ordinary way, etc."

Upon which we have to remark that (1) the removal of the *frænum* with a wedge-shaped portion of the prepuce, is in effect but a revival of the old method of Taxil and Jobert (de Lamballe), and that (2) it has the disadvantage of exposing the patient to the risk of secondary hemorrhage, a complication which we have ourselves met with in a case of circumcision in which the

¹ Guy's Hosp. Reports, 2d S., vol. viii.

² St. George's Hosp. Reports, vol. iv. p. 91, and No. of this Journal for July, 1870, p. 208.

frænum was divided at rather a higher point than usual. As to the deformity, to which Mr. Howse justly objects, we believe that it is much less apt to follow the operation of *circumcision* than that of simple *division* of the prepuce on its dorsal aspect, which some surgeons, for reasons which we have never been able to understand, seem to prefer.

We come next to *A Description of the Appearances of the Human Eye in Health and Disease as seen by the Ophthalmoscope. Seventh Series. Myopia; Region of the Yellow Spot.* By C. BADER. This short paper, which is a continuation of the author's previous contributions under the same general title, is accompanied with a chromo-lithographic plate containing five figures.

The next is at once one of the longest and one of the most valuable papers in the whole volume; it forms, indeed, one of the most important contributions to the literature of its subject with which we are acquainted. At the same time, candor compels us to add that it will prove, we fear, in a great degree "caviare to the general," and that it is not most appropriately placed in a volume of hospital reports. The paper in question is by Dr. WALTER MOXON, and is *On the Pathological Nature of Tumours*. We have read the whole of Dr. Moxon's essay with much interest, and would cordially commend it to the attention of such of our readers as take pleasure in studying the obscure but important subject of morbid growths; we must content ourselves, however, in this place, with quoting the author's conclusions, which are as follows:—

"*Summary of the theory of tumours.*—In the present state of our knowledge of tumours, both benignant and malignant, it is necessary to regard the hæmal processes as subordinate to the parenchymatous processes in their production.

"The blood furnishes a plasma to the tumour, and very likely favours the development of the tumour much in the same way as starvation in a plant favours the development of the aphids. Such favouring tendency in the blood may be necessary, but is not sufficient to form a tumour.

"The power of the blood-cells to form tumours in leukæmia, etc., if proved, is only a means of secondary causation, because the blood-cells themselves are derived from the solid textures. There is no reason to believe that the 'plasma' furnished by the blood can produce cells.

"The individual cell-elements of tumours arise by multiplication of the cell-elements of the parenchyma. This multiplication of the parenchyma-cells is always constitutional, although it be localised in the part, and although it may require prolonged irritation to elicit its activity. There is also a 'higher' controlling influence to be recognised in the formation of tumours—an influence equal to that which governs the organization of the several organs of the normal anatomy. This organizing influence determines the elementary cells into various plans according to the nature of the tumour."

Dr. Moxon's essay is illustrated with well-executed wood-cuts, showing the microscopic appearances of the various forms of tumour described by modern pathologists.

The next paper to be considered is called *Notes of Abnormalities observed in the Dissecting-Room, from October, 1870, to June, 1872*; by N. DAVIES-COLLEY, M.C., F. TAYLOR, M.D., and B. N. DALTON, M.B. The amount of anatomical work done by the students of Guy's Hospital may be estimated from the statement that no less than 160 subjects were dissected from October, 1870, to June, 1872. Abnormal arrangements of muscles, arteries, nerves, etc., were observed in many instances, and the more important variations are here enumerated, and will be referred to with interest by those who are engaged in the study of anatomical science.

A Case of Progressive Caseous Disease of the Lymphatic Glands after Disease of the Knee-joint, is narrated by JAMES F. GOODHART, M.B. The chief

point of interest in this case was that in the left lung were numerous masses of cheesy material, which appeared to have been formed by extension of disease from the lymphatic glands at the root of the organ; the case, in the words of the author, "is one of the very few instances on record, in which, precisely as in the lower animals, a tuberculosis has extended from a local cause in a manner so direct that it cannot be questioned."

The next paper is *On Suppuration and Sphacelus of the Tooth-pulp*; by S. J. A. SALTER, M.B., F.R.S. Suppuration of the tooth-pulp is believed by Mr. Salter to be a much commoner occurrence than is ordinarily supposed; he has so frequently found pus in small quantities in the pulps of comparatively healthy teeth, which have given rise to very moderate symptoms, that he is convinced that suppuration often exists without being suspected, the tooth recovering from its painful condition, and subsequently remaining as a useful and apparently a sound organ. With regard to the source of the pus in these cases, he adds—

"It has appeared to me that the pus in the tooth-pulp is formed at the expense and by the multiplication of the cells (granules of Purkinje) which so largely pervade the pulp, by their direct conversion into pus-cells, just as Virchow has shown that the pus is formed in parenchymatous organs by the proliferation of the development cells of the connective tissue."

The next paper is one of much practical interest and value; it is *On some of the New Growths developed in the Breast associated with Cysts*; by JOHN BIRKETT. Nine cases are given in detail, illustrating the various forms of new growth which are met with in connection with cysts in the mammary region, and the author proposes a mode of classifying cysts of the breast, which, as it differs somewhat from the classifications commonly employed, we copy for our readers' edification.

CYSTS IN THE BREAST.	I. Associated, communicating, or connected with the ducts.	<ol style="list-style-type: none"> 1. Milk. 2. Growths; with serum coagulable, and sometimes tinged with blood. 	<ol style="list-style-type: none"> 1. Adenoid. 2. Granulation cells. 3. Cancer.
	II. Not connected with the ducts.	<ol style="list-style-type: none"> 1. Blood. 2. Milk. 3. Simple cysts. 4. Entozoon cysts. 5. Growths; with serum coagulable, tinged with blood, and containing cholesterine. 	<ol style="list-style-type: none"> Serum not coagulable. 1. Adenoid. 2. Granulation cells. 3. Cancer.

Mr. Birkett's paper is illustrated with two fine plates, each containing two figures.

The last papers in the volume are the *Statistical Accounts of the Patients treated in Guy's Hospital during 1871 and 1872*; by J. C. STEELE, M.D. These papers contain elaborate tables of diseases, injuries, operations, etc., and furnish a great deal of valuable information in a form convenient for reference. Their study forces upon us one reflection, viz., that it is a matter for regret that the large amount of practical surgery mirrored forth in these tables should be so inadequately represented in the papers contained in the body of the volume. Excellent and admirable as they may be in themselves, such papers as, for instance, Dr. Moxon's on tumours, are not what we have been in the habit of looking for in the successive volumes of *Guy's Hospital Reports*.

J. A., JR.

ART. XVI.—*Saint Thomas's Hospital Reports*. New Series. Edited by Dr. BRISTOWE, Dr. STONE, and Mr. CROFT. Vol. III. 8vo., pp. x., 381. London: J. & A. Churchill, 1873.

THIS volume of the St. Thomas's Reports attests the interest taken in the series by the Staff of the Hospital, and their desire to discharge the whole duty pertaining to their appointment. We are happy to be able to chronicle this fact, for hospital appointees too often forget that they hold their position in trust, for the education of their professional brethren and for the advancement of medical science, as well as for the cure of the sick and disabled.

The opening paper of the volume is a *Report on Cases of Rheumatic Fever treated between the spring of 1868 and the same period of 1872*, by THOMAS B. PEACOCK, M.D., Senior Physician to the Hospital. It will be remembered that in 1868 Dr. Peacock analyzed 146 cases of rheumatic fever treated by him during a series of years (see No. of this Journal for April, 1870, page 495), and since then he has had under his care 87 cases, which he analyzes in the present paper.

Dr. Peacock's cases prove the existence of a much greater tendency for the heart to be affected in the cases of rheumatism which occur in early life than in those in persons at more advanced ages. The proportion of cardiac complication does not appear to differ much according to the intensity of the disease, but there exists a very remarkable difference between the kind of cardiac complication which occurred in the two classes of cases; endocarditis being especially common in the cases of more severe disease, while pericarditis more particularly occurred in the slighter cases.

From a study of his cases Dr. Peacock finds—

"That when a case of rheumatic fever is complicated by the occurrence of simple pericarditis, the local disease will probably be recovered from without leaving behind it any obvious impairment of the condition of the heart. When, on the other hand, there is endocarditis, either alone or with pericarditis, and especially if the local disease becomes fully developed before the patient comes under treatment, there is great risk that some marked permanent defect in the heart will remain."

Of the 87 cases 1 died, and of the previously reported 146 cases 2 died, making, in the 233 cases, a mortality of 1.28 per cent. The treatment corresponded closely in the different cases.

"It consisted in the employment of bicarbonate of potash, alone or with nitrate of potash, in by far the majority of the cases. In some, and especially those of a more subacute character, iodide of potassium, bicarbonate of potash, and small doses of colchicum were used, and this was also the treatment in some cases in which subacute rheumatic affections remained after the more active symptoms had subsided. Dover's powder or opium was given when the patient was in great pain or was very restless at night, and with these remedies were occasionally combined, especially in the cases of cardiac or other complication, and when the tongue was much furred, small doses of gray powder or calomel.

"As local applications blisters were very generally placed around the limbs above the affected joints, and several of them were often applied at the same time, and they were always followed by poultices. In four cases the blisters were had recourse to without any constitutional treatment. In the cases in which cardiac complication occurred, blisters and poultices were very generally applied over the region of the heart, and in one instance leeches were used, the general treatment being otherwise the same as in other cases.

"During convalescence, quinia, bark, and iron were generally given; and

stimulants, brandy or wine, were exhibited during the progress of the cases as required."

The duration of treatment averaged twenty to twenty-two days.

In an article on the *Varieties of General Paralysis*, Dr. FREDERICK POLLARD discusses especially, 1, general paralysis of the insane; 2, general spinal paralysis, and 3, hysterical paralysis. We are happy to learn that Dr. Bristowe is preparing for these Reports a paper on Hysterical Paralysis, which, from the nature of the subject and the well-known ability of its author, cannot fail to prove interesting.

Dr. GERVIS reports a *Case of Annular Laceration of the Cervix Uteri occurring during Labour*, in which a ring of the cervix was completely separated behind and laterally, but retained its connection with the uterus in front. The almost collapsed condition of the patient did not permit of other treatment than replacing the ring as far as possible *in situ*. Seven days afterward it was apparent on examination that the ring was uniting with the cervix and had much contracted, and on the 29th day a linear depression alone remained to show where the laceration had taken place.

The points of interest in this case are, firstly, its rarity, and secondly, its successful issue. Fortunately the slight connection of the loop of cervix with the uterus proved sufficient not only to maintain its vitality, but to enable it to share in the general contraction of the uterus which followed delivery.

Tubercular Fever and its Relation to Enteric Fever is the title of an interesting paper by Dr. JOHN HARLEY. He uses the term "tubercular fever" instead of acute tuberculosis, because he considers the latter term to imply a more chronic and less febrile condition than is exemplified in his cases.

The object of the paper is to prove not only that tubercle may form an actual component of enteric fever, but that fully developed enteric fever may be solely caused by the simultaneous eruption of miliary tubercle in the intestinal glands and in the lungs. Dr. Harley denies that a specific poison is the cause of enteric fever, because he has never seen it, and that the inflammatory product is a *specific* deposit, because were it, we would then have two kinds of specific exudation deposited simultaneously, the one in the intestinal glands, the other in the lungs or any other part; which he thinks is absurd.

Dr. Harley believes that enteric fever "may arise in any simple inflammatory condition of the body (particularly pneumonia) as soon as the inflammatory action involves the glands of the ileum or colon;" that "when the ileal glands alone are affected, the distinction between tubercular and enteric fevers is absolutely *nil*."

Dr. Harley appears to consider that tuberculous disease of the intestine may manifest itself as enteric fever. Although the diagnosis at the bedside of these two diseases is sometimes obscure, yet the pathological evidence of their difference is marked. Moreover a careful observation of the temperature, which Dr. Harley seems to have omitted in his cases, serves to throw light on the diagnosis. In enteric fever the temperature is high by the end of the first week, and keeps high for an indefinite time; when it begins to decline, its diminution is regular; whereas in acute phthisis the temperature is subject to great and sudden variations, even to the extent of six or seven degrees, and bears no regular relation with the respiration or pulse.

Dr. Harley has not considered it necessary to argue the correctness of his views, and we doubt if the present paper will make any converts to his peculiar doctrines.

Cases of Dysenteric Diarrhœa is the title of a paper by EDWARD CLAPTON, M.D. The term "Dysenteric Diarrhœa" the author applies to a class of cases

which are commonly met with, in which the symptoms are of a mixed character, and the parts chiefly involved are the upper portion of the colon and (either directly or sympathetically) the lower end of the ileum, instead of the lower part of the colon and the rectum, which are said to be the principal seats of the disease in tropical regions.

Four of the cases described by Dr. Clapton were syphilitic, and in each iodide of potassium almost at once afforded relief, and this, on the continuance of the drug, proved permanent. Other treatment was of little or no avail.

Dr. G. H. EVANS contributes notes of eight cases of *Emphyema*. His cases do not present any peculiarities requiring notice here.

The succeeding paper, *On some points in the Medical History of the Clergy Mutual Assurance Society*, by W. H. STONER, F.R.C.P., and STEWART HELDER, Fellow of the Institute of Actuaries, presents some statistical and medical facts concerning the early history of this flourishing society, which will prove valuable to actuaries and others interested in life insurance.

Mr. J. F. PAYNE, in reporting a *Case of Injury to the Sympathetic Nerve in the Neck*, makes an interesting contribution to the pathology of the sympathetic nerve in man.

The subject of this paper when aged fifteen months presented a marked difference between the two sides of his face. The left side was pale, the palpebral fissure was distinctly smaller, and a little sunk in the head; there appeared to be no difference in the size of the globe. The left pupil was smaller than the right, and the eye seemed insufficiently provided with moisture. Although there was an appearance of ptosis of the left upper lid, no paralysis of this or any other facial muscle could be detected. The symptoms of the right side of the face were the opposite of those presented by the left. The right eye watered, the eyelids were opened wider, and the eye was more prominent, and the pupil larger than the left. There was a constant running from the right nostril. When the child from any cause flushed, the right side of his face became red, while the left remained pale. The right side only would sweat under any circumstances, the left remaining quite dry. This abnormality and inequality of the two sides of the face, the child is said to have presented from birth. No difference could be perceived between the two sides in the development of the teeth, condition of the tongue, lips or mouth, size and general nutrition of the parts. The condition of the hair was doubtful.

It will be remembered that Dr. Ogle described to the Royal Medical and Chirurgical Society (see No. of this Journal for April, 1870, p. 477), a case somewhat similar to this. Accepting the explanation which Dr. Ogle then gave, Mr. Payne concludes that the cervical sympathetic of the left side in the present case must have received (probably, judging from the history, at birth) an injury amounting to severance; that this, in all probability, first of all produced hyperæmia, increased secretion, and contracted pupil of that side (though of that stage there is no record or evidence), and that this stage was followed by the condition which became permanent, of anæmia, deficient secretion, and contracted pupil.

In a paper *On the Existence of Continued Currents in Fluids*, Mr. GEORGE RAINEY shows the effect of alterations in temperature upon the currents which, in a previous volume of the Reports, he described as existing in fluids in a so-called state of rest.

Dr. JOHN S. BRISTOWE contributes some very interesting and instructive *Cases illustrating the relative effects of Pressure on the Trachea and Pressure on the Recurrent Laryngeal Nerve, in producing Impairment of Voice and Dyspnoea*. Impairment of voice from paralysis of one of the vocal cords and

paroxysmal attacks of dyspnœa. are often symptomatic of intra-thoracic aneurism; but, Dr. Bristowe asks, are both these symptoms the result of pressure on the recurrent laryngeal nerve? In many cases of aneurism this condition exists, and the symptoms mentioned are present; but, on the other hand, we meet with cases of laryngeal paralysis in which there is no dyspnœa, and with cases of intra-thoracic tumour in which there is no such palsy, but in which, nevertheless, paroxysmal dyspnœa forms a marked feature. For instance, Dr. Bristowe relates a case of cancer of the œsophagus, in which hoarseness of voice and paralysis of the left vocal cord were present. Death suddenly occurred from hemorrhage due to perforation of the left common carotid. At the post-mortem examination the left recurrent laryngeal was found to be entirely destroyed in a good inch of its course by the advance of the cancer. This patient had no difficulty of breathing from first to last.

In another case there was equally clear proof, post-mortem, that the patient was the subject of complete destruction of the left recurrent laryngeal, and it is certain that, during life, he suffered from those symptoms which we attribute to that lesion, viz., impairment of laryngeal voice and difficulty in deglutition of fluids, owing to a tendency to pass into the trachea; but there was not a trace of dyspnœa, either persistent or paroxysmal.

As illustrating the effects of compression of the trachea alone, Dr. Bristowe narrates the case of a middle-aged woman admitted into the hospital with feverish symptoms, the cause of which was not very apparent. After lying there for two or three days, she was attacked suddenly with intense dyspnœa, followed in a minute or two by blackness of the face and insensibility. It was obvious that the patient was dying, and that there was a moderate sized, unsymmetrical tumour in the middle line of the neck immediately above the sternum, which, by the pressure it was exerting, was the cause of her alarming condition. On examining the tumour, it was perceived that a portion, at all events, of its bulk was cystic. A fine trocar and canula were passed into the tumour, and between three and four ounces of viscid, reddish-brown fluid were removed. As the fluid escaped, the dyspnœa diminished, her livid tint faded away, her pulse became slower, her eyes opened, and within a minute or two she appeared to be entirely restored to life and health. The patient suffered from a sub-sternal bronchocele; bronchocele, that is to say, with extension of the tumour behind the sternum, and between that bone and the trachea, a form of the disease which is always extremely dangerous from its liability to compress the trachea from before backwards, and thus to cause paroxysmal and ultimately fatal dyspnœa. There are no reasons here, nor is there generally any reason in such cases, to suspect any implication of the recurrent laryngeal.

Another patient of Dr. Bristowe died recently in the hospital from aortic aneurism. The local indications of the aneurism were obvious. He suffered from dyspnœa, liable to sudden terrible exacerbations. His respirations and cough were markedly stridulous. But there was never any indication of palsy of the vocal cord, nor any tendency for food to pass the wrong way; and his voice maintained its normal intonation. At the post-mortem the recurrent laryngeals were found unaffected.

These cases show, in the first place, that destruction of the functional activity of one recurrent laryngeal nerve is marked by paralysis of the corresponding vocal cord, which can be recognized by means of the laryngoscope, by impairment of the musical quality of the voice, and (probably) by some difficulty of swallowing, owing to the tendency of food to slip into the larynx; but is not necessarily attended with stridor or dyspnœa; and in the second place, that

compression of the trachea involves stridor and difficulty of breathing, which is often paroxysmal and liable to end in sudden death, but that it does not of itself interfere with perfect intonation, excepting only in so far as it may render the voice weak by diminishing the supply of wind to the vocal organ.

The exacerbations of dyspnoea occurring in narrowing of the trachea Dr. Bristowe thinks may be due to actual accumulation of mucus in or below the affected part, and to the difficulty of dislodging that mucus in consequence of the mechanical impediment existing there to the performance of an effective cough.

Tracheotomy, Dr. Bristowe, of course, thinks is useless in those cases, as the obstruction is not at the laryngeal orifice, but in the trachea at a point below the lowest possible point of operation.

In explanation of this valuable practical paper, Dr. Morell Mackenzie states (*London Med. Record*, April 9, 1873) that when the recurrent nerve is pressed upon, the vocal cord of the affected side does not remain in an intermediate position between extreme abduction and extreme adduction, but is always seen quite near the median line. Hence in these cases the arc of the laryngeal canal is always diminished. There is always, therefore, slight dyspnoea. This may not be apparent when the patient is perfectly quiet; but if the respiration be at all hurried or forced, slight stridor is almost invariably perceptible. There is also, generally, slight stridor in deep sleep. Nevertheless, it is perfectly true that severe dyspnoea of a paroxysmal character does not occur, when, owing to paralysis of the muscles, the vocal cord is in the position described.

Dr. Mackenzie moreover states that Dr. Bristowe's important deductions are strongly confirmed by the observation of cases of bilateral paralysis of the abductors of the vocal cords from pressure on both recurrences; though there is constant dyspnoea in these cases, there are no attacks of suffocation of a sudden and severe character. In addition to the causes referred to by Dr. Bristowe, as giving rise to the exacerbations, Dr. Mackenzie thinks it probable that, in the case of aneurismal tumours, the paroxysms of suffocation are sometimes brought on by a sudden increase in the volume of the sac.

The next paper, also by Dr. Bristowe, is *An Attempt to Explain the Cause of the Formation of the Spiral Fibre in Vegetable Cells and Vessels*.

Mr. W. M. ORD follows in a very interesting and well written article *On the Relation of Gout to Uric Acid*, which he sums up as follows:—

"1. Gout is a mode of decay of the whole system, marked by the deposit of urate of soda in and about joints, and by local inflammation of a particular kind.

"2. The deposit of the urate is a result of local or general disintegration, and is not to be regarded as a means of eliminating urate from the blood.

"3. The local inflammations do not necessarily depend upon the deposit of urate, and the deposit is not a consequence of inflammation; at the same time it is probable that excess of urate in the blood produces irritation of tissues.

"4. The local inflammation is peculiar in respect of the ease with which it is produced, of the pain by which it is attended, and of the products, which are chemical rather than structural; chemical substance of low molecule, tending to crystallize or to be dissolved, being formed in the part, instead of substances of high molecule tending to be organized. Interstitial subcrystalline deposit is common, suppuration rare, in gout.

"5. The local inflammations are set going by local exciting causes.

"6. The local degenerations and inflammations tend to infect the rest of the system through the blood, and to set up similar actions elsewhere through reflex nervous action."

The volume concludes with the *Report of the Obstetrical Department*, by HENRY GERVIS, M.D., and the *Medical Reports*, by S. E. SOLLY, F.R.C.S.

I. M. H.

Of the *Surgical* papers, the first is an interesting article *On Subastragaloid Dislocation of the Foot*; by WILLIAM MAC CORMAC, F.R.C.S. The author refers to the confusion which prevails among surgical writers, as to the nomenclature of the various dislocations met with in the neighbourhood of the ankle-joint, and expresses his preference for such a classification as Broca's; in fact, as pointed out by Mr. Mac Cormac, there are three distinct forms of displacement which occur in this region, and which should receive distinct names. Thus there may be a dislocation of the entire foot at the tibio-tarsal joint—properly called a dislocation of the foot or ankle; the astragalus may remain in place, while the rest of the foot is displaced backward or to either side—sub-astragaloid dislocation; or the astragalus itself may be separated from all its connections, in which case alone can there properly be said to be a dislocation of this bone. The sub-astragaloid luxation is believed by Mr. Mac Cormac to be more common than is often supposed, and he gives in the paper now under consideration details of four cases which have occurred under his own observation, and shows that several cases which have been described by Cooper, Chassaignac, and others, as dislocations of the astragalus, were really examples of the form of injury in question. With regard to *treatment*, Mr. Mac Cormac judiciously advises that; if reduction be found impracticable even with the aid of tenotomy, the surgeon should temporize, reserving excision of the astragalus as a secondary operation should it be found necessary.

We have next to consider a short paper by Mr. FRANCIS MASON, F.R.C.S., *On the Treatment of Cicatrices after Burns*. The operation recommended and practised by Mr. Mason is analogous to Dieffenbach's ingenious mode of closing fistulæ in the penile portion of the male urethra. The cicatrix of the burn is first cut across from side to side, the incision extending in both directions into healthy skin, and the two halves of the scar are then thoroughly separated from the subjacent textures and allowed to retract, thus leaving a raw surface between their extremities. To cover this surface bridge-like flaps are now dissected up on either side, as in Dieffenbach's operation, and brought together in the median line with wire sutures, while the size of the remaining wounds is as much as possible diminished by the introduction of hare-lip pins. This operation has been practised by Mr. Mason in three cases—the offending cicatrices in two instances being in the neck, and in one at the bend of the elbow. While we have no doubt that Mr. M. honestly believes that this operation is original with himself, candour compels us to say that it is almost identical with that long since practised by the late Prof. Mütter, of this city, and by him described and illustrated with a wood-cut in the number of this Journal for July, 1842, page 78.

The next paper which demands our attention is a continuation of one in the first volume of the Reports,¹ and is *On Temperature in Surgical Cases*; by W. W. WAGSTAFFE, F.R.C.S. In his present communication Mr. Wagstaffe considers the temperature in *pyæmia*; the first rigor is accompanied by a sudden rise in temperature of from 2° to 6° F., the point reached by the thermometer during the first chill being nearly as high as that reached at any subsequent period, though the increase is less, for the reason that between the rigors the temperature often falls considerably below the normal standard.

¹ See No. of this Journal for April, 1871, p. 529.

The variations in temperature are not only very great in pyæmia, sometimes ranging over 10° or 11° F., but they occur with great irregularity; and this circumstance has in Mr. Wagstaffe's opinion a certain diagnostic value. As regards prognosis it can only be said that an unusually great depression of temperature often precedes death, and that a very high temperature, and increased frequency or increased extent of variations, are unfavourable signs. Mr. Wagstaffe's paper contains a table of twenty cases.

We have next to consider a communication from F. CHURCHILL, M.B., F.R.C.S., *On some of the Complications of Strangulated Hernia and their Diagnosis*. This is a paper of some practical interest, and gives details of several cases in which the symptoms were well adapted to cause uncertainty as to whether the surgeon had or had not to deal with a hernia in a state of strangulation. In one case, in which an inguino-scrotal hernia was known to have existed for many years, an exploratory operation showed that those symptoms which gave rise to the suspicion that strangulation had occurred, were really due to the formation of an abscess in the sheath of the spermatic cord; in another instance there was actually a strangulated hernia on one side, and a spermatocoele on the other; in another case an abscess of the kidney and perityphlitis complicated an irreducible hernia, which however was not strangulated; while in a fourth case the sac of an old umbilical hernia was itself the seat of suppuration.

Mr. R. LIEBREICH, M.R.C.S., contributes a paper *On the Use and Abuse of Atropine*, (1) in iritis, (2) in keratitis, (3) in operations, (4) in injuries, and (5) as an aid to diagnosis. In *iritis*, Mr. Liebreich recommends the use of a four-grain solution of atropia, one or two drops being instilled at intervals of five minutes until complete dilatation of the pupil has been effected, and this dilatation being subsequently maintained by the employment of one or more instillations daily as long as may be required. The difficulties met with in using atropia in cases of iritis, are (1) too great intensity of the inflammatory process—to be remedied by the application of dry warmth, and, if necessary, by bleeding and the use of derivatives; (2) the presence of copious exudations in the anterior chamber—requiring the performance of a preliminary paracentesis; (3) the existence of completely organized adhesions—in which case constitutional treatment may often advantageously precede the use of the mydriatic; (4) symptoms of atropia poisoning, from a minute quantity of the drug entering the lachrymal ducts and thence reaching the nose and throat; (5) excessive sensibility of the palpebral skin and mucous membrane. To prevent the occurrence of atropia poisoning the lower lid may be slightly drawn down so as to evert the punctum lacrymale, during the instillation, or the throat may be simply rinsed out after the application is completed. For exceptional cases Mr. Liebreich employs a little instrument somewhat like a serrefine, to pinch up a fold of the lid, and thus evert the punctum. Should the use of atropia cause acute inflammation of the lids and conjunctiva—of which rare accident we have ourselves seen one well-marked example—the mydriatic should be abandoned, and a lotion of nitrate of silver substituted until the inflammation has subsided.

In the superficial forms of *keratitis*, Mr. Liebreich stops the application of atropia as soon as a single instillation produces an effect for twenty-four hours, then proceeding to use nitrate of silver; but in parenchymatous keratitis he continues the employment of the mydriatic for some time after the cessation of the deep irritation. In his remarks on the use of atropia as an aid to *diagnosis*, Mr. Liebreich expatiates upon the disadvantage of having the central hole of the ophthalmoscopic mirror either too large or too small, and adds:—

"I therefore propose to make the hole not smaller than two millimètres and the mirror not smaller than three centimètres, and to use in preference a thin silvered glass mirror, the centre of which is not perforated, but only deprived of the silver covering. The focus of the mirror may be eight or ten inches."

The next paper for our consideration is called *Statistics of Two Thousand Four Hundred and One Cases of Hernia*; by JOHN CROFT, F.R.C.S. Mr. Croft's figures, derived from his records of the National Truss Society, agree in most particulars with those obtained by Mr. Kingdon from the Reports of the City of London Truss Society. Mr. Croft's 2401 cases were observed in the course of seven years, and of the whole number of patients (none being counted twice) 1990 were males and 411 females—a proportion of nearly five to one. * Mr. Kingdon's statistics likewise give a proportion of five males to one female, but Cloquet's estimate, derived from 457 dissections of hernia, gives a proportion of only two to one, while the herniotomy records of several London hospitals examined by Mr. Croft, tend to show that strangulation occurs almost as often in women as in men. "The truth," adds Mr. C., "may lie between the two sets of proportions, . . . that is 3.033 to 1."

As regards *age*, 1355 of the 2401 patients were under, and 1046 over, thirty-five years of age, but by comparing these figures with those of the *total population* of London at each age, it is found that hernia is proportionally more frequent after than before middle age. The first quinquennium of life is, however, that in which hernia is most apt to occur, no less than 472 of Mr. Croft's cases having been in children under five years of age.

As is well known, *inguinal* is the most common form of hernia; of Mr. Croft's 2401 cases, 2066 were of this kind of rupture. Of the 2066 patients 1907 were males and only 159 females, while there were 189 females and only 40 males affected with *femoral* hernia. *Umbilical* rupture was observed in 42 males and in 62 females.

The last surgical paper calling for special comment is by Mr. SYDNEY JONES, F.R.C.S., M.B., and is called a *Contribution towards the Surgical Treatment of Diseased Joints*. This paper may be considered a sequel to others published by the author in previous volumes of the Reports,¹ and, like its predecessors, is adorned with lithographic plates—six in number in this instance, and containing twelve figures. In his present communication Mr. Jones gives the details of thirteen cases of excision, eleven of the knee, and one each of the ankle and wrist. He has not deviated as yet from the operative procedure employed in his other cases of knee excision, viz., by means of an oval flap taken from the front of the joint. But—

"At the same time he has a strong desire to adopt two lateral incisions, if a thorough performance of the operation by this mode could be matured. He has tried this plan on the dead subject, and finds it easy of performance; and his friend, Mr. Treves of Margate, has carried it out on the living, making use of a chain saw to resect the bones. On the dead subject the author has found it not difficult to pass close behind the bones a narrow blade of Butcher's saw; this can be afterwards fixed, and resection done from behind forwards."

For our own part we are so well satisfied with the simple transverse incision, originally suggested by Park, and more recently practised by Textor, Kempe, and Fergusson—and which we consider infinitely preferable to the anterior oval flap commonly employed by British surgeons—that we have no desire to substitute any other mode of operating; a transverse cicatrix, though doubtless objectionable in the case of the elbow where a movable joint is hoped for, is perfectly harmless in the case of the knee, where the surgeon endeavours to

¹ See Nos. of this Journal for April, 1871, p. 528, and Oct. 1872, p. 495.

obtain complete bony ankylosis. In speaking of the constitutional treatment when profuse suppuration occurs after excision, Mr. Jones makes a practical observation which is entirely conformable to our own experience :—

“In not a few cases,” he says, “the author has found diarrhoea supervene in this suppurative stage, no doubt from systemic poisoning; this not to be remedied by astringents, but by quinine in large doses. It would not be desirable to arrest suddenly this elimination of poisonous material.”

Mr. Jones has now done altogether thirty-two knee-joint excisions; recovery has followed in twenty-one instances, and death in five, while five cases are still under observation, and in one subsequent amputation was found necessary. The mortality of his terminated cases has been therefore 18.5 per cent., a proportion considerably less than that given by Penières for all ages.

The *Surgical Report*, for 1871, is contributed by W. ANDERSON, F.R.C.S., and contains sub-tables of surgical operations, and of cases of strangulated hernia, erysipelas, pyæmia, tetanus, reactionary and secondary hemorrhage, etc. It conveys, as usual, a great deal of practical information in a very condensed form.

The “new series” of St. Thomas’s Hospital Reports, which now bids fair to be permanently successful, already takes rank with those which have been longer established, as a series of great value and deep professional interest.

J. A., JR.

ART. XVII.—*The Liverpool and Manchester Medical and Surgical Reports*, 1873. Edited by S. MESSENGER BRADLEY, F.R.C.S., P. M. BRAIDWOOD, M.D., REGINALD HARRISON, F.R.C.S., WALTER WHITEHEAD, F.R.C.S.E. 8vo. pp. xviii. 216. Manchester: J. E. Cornish, 1873.

THE present volume is an amalgamation of the Liverpool and the Manchester Reports, and we regret to find that it affords no evidence of increased literary strength from this union.

According to our custom we shall first notice the medical papers of the volume, and afterwards those specially pertaining to surgery.

The first article is *On Climate and its Influences*; by THOMAS INMAN, M.D., and is a cursory, yet pleasantly written notice of the various places on the south coast of France and west coast of Italy, which are usually resorted to by consumptives.

DR. WILLIAM ROBERTS offers some *Clinical Remarks on Hydatid Cysts*, based on the examination of six cases. He finds that the fluid of hydatid cysts varies in character according as the cyst contains living or dead echinococci. If the echinococci be living, the fluid is limpid, colourless, or faintly opalescent, with small white granules (broods of scolices or echinococci heads) floating in it, and may be slightly albuminous. When the parasite dies, the fluid rapidly changes; it becomes largely albuminous, and afterwards loses its transparency and becomes thick, white, and opaque, so as to resemble pus in its naked eye characters.

In a case of hydatid of the liver, Dr. Roberts used large doses of iodide of potassium, as much as thirty grains three times a day, with the result, apparently, of destroying the parasite. The tumour had been steadily growing up to the moment when the patient began to take the iodide, and even for ten days after; then diminution and retrogression commenced, and went on progressively,

though very slowly, until the cyst had entirely disappeared. This result certainly demands the trial of the drug in similar cases.

MR. WILLIAM CARTER contributes *Notes of Cases*. The first is on the good effects obtained in a case of local paralysis, by the hypodermic use of a concentrated solution of strychnia. The largest amount injected at any one time was three twenty-fifths of a grain. When a concentrated solution is hypodermically injected, the effects are believed to be more local than when it is more diluted, and consequently, what would at first sight appear to be dangerous doses, may be thus administered without the system generally being injuriously affected.

Following the above are notes of a case of paralysis of the expiratory muscles from the pressure of ascitic fluid, in which the induced current was applied over the abdominal walls and lower intercostal muscles, with marked benefit. Some observations are also given on the use of digested milk in cases of great irritability of the stomach; on the tincture of veratrum viride in acute rheumatism; and on a case of hernia into the pericardium.

DR. HENRY BARNES is the author of a very interesting article *On Eclampsia Nutans*—a peculiar convulsive disorder occurring in children, and characterized by paroxysms of rapid and involuntary bowing or nodding of the head. This disease is of very rare occurrence and does not appear to have attracted the attention of physicians until about thirty years ago. The first case believed to be recorded is one by Mr. West, of Tunbridge Wells, England, who in the *Lancet* for February 13, 1841, gives a description of the disease as he observed it in his own son (see *American Journal of Medical Science* July, 1841, page 187).

Dr. Barnes has been able to find the record of but eight cases, and from a careful study of these, together with a case which recently occurred in his practice, he inclines to the belief that the disease is closely allied to epilepsy, an opinion which is confirmed by the efficacy of bromide of potassium in Dr. Barnes's case, and by the fact that it, like epilepsy, leads to impairment of the intellect. The convulsive paroxysms vary in frequency from one to fifteen in the twenty-four hours, and, in severity, lasting for a few seconds or a few minutes. Usually, at the commencement of the attack, the movements are slow and more like ordinary salutations, hence the name salaam convulsions once given to it; but as the disease progresses they become frightfully rapid, and when severe often cause fatal exhaustion. The earliest age at which the disease has been noticed is four months, and the oldest case recorded was six years. The worst attacks come on after sleep; but even in these consciousness is not lost, but the child seems bewildered and frightened. Children of both sexes are equally liable to the disease, and it appears to be independent of dentition. This affection may come on suddenly without premonitory symptoms; in other cases, headache, drowsiness, a heavy and peculiar look about the eyes, and strabismus have been observed. After it has lasted for some time, the general health usually becomes affected, and there is great debility. In bad cases other convulsive movements become added, such as bending forward of the body, convulsive jerking of the arms and legs, and frequently the muscles of the face become affected, especially the orbicularis palpebrarum. Occasionally general convulsions intervene, and then great impairment of the mind or complete idiocy usually terminates the case.

As none of the cases died during the progress of the disease, nothing is known of its morbid anatomy. The treatment used has been various and unsatisfactory, but the result obtained in Dr. Barnes's case points to the efficacy of bromide of potassium.

Mr. FRANCIS VACHER, of Birkenhead, offers some *Remarks on a New Midwifery Forceps*.

Dr. RICHARD CATON contributes *Notes on the Use of some of the Newer Therapeutic Agents in the Diseases of Children*. Dr. Caton has found pepsin of great value in that form of dyspepsia of infants in which milk is not digested. The second drug particularly experimented with is the tribasic phosphate of soda of the British Pharmacopœia. When the symptoms termed "bilious" are present, in jaundice, in those states of the system where it is obvious that neither assimilation nor the excretion of waste material is being performed properly, Dr. Caton has found great advantage from the use of the phosphate of soda. Chlorate of potash he has found serviceable in stomatitis, aphthous conditions of the mouth and throat, and ulceration of the tonsils. Sulphurous acid in the form of spray he has used in several cases of diphtheria, with apparent advantage.

In the numerous cases in which cow's milk is vomited by infants, after much pain and distress, in the form of hard curds of the size of a finger, Dr. Caton has derived great advantage from following Prof. Vogel's recommendation that two or three grains of the carbonate of soda be added to each bottle of milk. By thus making the milk slightly more alkaline, the sodium-albumen or casein forms a loose and easily digested coagulum, like that of human milk.

On Certain Forms of Visceral Neuralgia is the title of an article by Dr. CLIFFORD ALLBUTT, of Leeds. It appears that the author is more fortunate than most of his brethren in finding neuralgia "to be one of those [diseases] most amenable to palliative and curative interference." "Subsidiary remedies apart," he says, "it would be hard to find better antidotes against any human suffering than we have against nerve pain in quinia, in iron, in arsenic, in the hypodermic use of morphia, in the continuous battery current, in change of climate, and in a well-ordered diet."

In the present paper Dr. Allbutt writes especially of gastralgia and ovalgia. In the treatment of the former he recommends that the diet should be liberal and taken in small quantities at frequent intervals. All causes of "wear" must be removed and where anæmia exists, iron and aloes should be given, and quinia and strychnia in small doses makes a "capital chronic medicine for gastralgia." But of all the remedies "arsenic is king." Dr. Allbutt always prescribes Fowler's solution in any simple water, a dose of which, containing three to five drops of the solution, is taken largely diluted thrice daily with meals, and should be carefully pushed to the edge of its physiological effects. The only palliative remedy of any importance is morphia used hypodermically and ether and chloroform given internally in small doses.

In iron and arsenic, as chronic remedies, and in quinia or hypodermics of morphia, as immediate remedies, Dr. Allbutt says we may find a tolerably sure cure for neuralgia.

In the succeeding article *On Cephalotripsy*, Dr. J. WALLACE states that he feels sure that this operation, skilfully performed at the proper stage of labour, will very considerably reduce the maternal mortality, not only because of its superiority over the older operations, but, also perhaps, for the same reasons that craniotomy and the crotchet in the hands of some accoucheurs are very much less fatal than in the hands of others.

In an article on *Induction of Premature Labour*, Mr. WALTER WHITEHEAD attributes almost all the failures which have attended Barnes's method to the bougie escaping from the uterus before it has fulfilled its object. To obviate this Mr. Whitehead attaches the bougie to an air pessary with the hope of ful-

filling two objects, 1, to keep the bougie in the uterus; 2, to dilate the vagina and thus facilitate the ulterior stages of labour by acting as an additional excitant; and, moreover, expanding the channel through which the head is to pass. Mr. Whitehead has tried this plan in six cases, and found it safe and efficient.

Mr. J. CAMPBELL BROWN writes *On Butter* and the mode of analyzing it. A subject which may be interesting to a number of medical readers, but in a volume of hospital reports, is certainly out of place. I. M. H.

The first surgical paper we notice is one by Mr. THOMAS WINDSOR, *On the Use of Atropine in the Treatment of Short Sight*. Mr. Windsor's attention was first directed to the subject by the writings of Professor Schiess, some of whose statistics and conclusions are given. We are told, what has long been known to oculists, that most myopic eyes are diseased, which is in direct opposition to the wide-spread general opinion that near-sighted eyes are especially good to last—an opinion which the observations of ophthalmologists should entirely dissipate. Myopic elongation of the globe is very often preceded, in the experience of Messrs. Windsor and Schiess, by spasm of the ciliary muscle, which they have found can be overcome by the methodical continued use of atropia, and the elongation of the eyeball, due to strained accommodation, can thus be prevented. The conclusions arrived at are: "1. Slight myopia may be entirely due to spasm of the ciliary muscle. 2. Many cases, in which the eye is elongated, are accompanied and made worse by spasm of this muscle. 3. After some time spasm is replaced by elongation. 4. Spasm of the ciliary muscle may be removed by the methodical use of atropia. 5. Myopia may be cured in some, and its increase prevented in other cases by this treatment."

As an appendix to his paper in the previous volume of the Manchester Reports on *The Urethral Douche*, Mr. WINDSOR refers to the authors who have preceded him in writing upon the same subject, namely, M. Reliquet, Dr. A. Hewson, and Mr. A. E. Durham, giving to them a full meed of credit for their investigations, though he still thinks that his own plan of applying the principle is the best. The addendum is a graceful one, and was needed. Mr. W. is both a forcible and pleasing writer, and we should gladly see longer contributions from his pen.

Mr. JAMES TAYLOR, Surgeon to the Chester General Infirmary, contributes *A Method of Treating Wounds, with Cases*, said method consisting in leaving them to the unaided powers of nature, as was long ago advocated by Mr. Teale, of Leeds. The results reached by Mr. Taylor appear to have been such as would be looked for by any well educated surgeon, who is in the habit of placing dressings upon recent wounds for the protection they afford and who expects that they will be curative only in so far as they allow nature to act unimpeded.

Mr. W. MACFIE CAMPBELL narrates the results of the *Treatment of Amputations by Cotton-Wool* in the Northern Hospital. The method of M. Guérin was somewhat modified, the wounds being brought together by sutures and covered with a carbolized dressing before their envelopment in the wool. Our own limited experience with this dressing leads us to endorse Mr. Campbell's statement that it is exceedingly important that *all* bleeding should be stopped, and the wound allowed to glaze, before it is done up in the wool, as, in those cases where no oozing took place the results were favourable, but where the discharge was sufficient to soak through the dressing and make its speedy removal necessary no advantage appeared to attend its use.

The next article is styled *A Case of Rare Vaginal Abnormality* (!), by RODERICK MACLAREN, M.D., Surgeon to the Carlisle Dispensary. The abnormality was a

longitudinal septum extending from a short distance behind the hymen to the os uteri, to one lip of which it was attached, so that on one side there existed a narrow vagina which communicated with the uterus, while on the other was a canal terminating in a cul de sac. As the presence of this septum appeared to cause inconvenience and would only admit of the introduction of two fingers into the vagina at once, it was removed by scissors, and by keeping the parts distended with a tampon, a vagina sufficiently capacious to suit the ideas of the patient and her surgeon was easily obtained. There was no evidence of a divided uterus.

The next surgical paper is *On the Extirpation of Enlarged Lymphatic Glands*, by RUSHTON PARKER, F.R.C.S., who advocates the removal of scrofulous glands early, before softening has occurred, because the treatment is the shortest, it is certain to get rid of the manifestations of the disease, and the resulting cicatrix need be simply linear, which is greatly preferable to a puckered scar. These conclusions are based upon twenty-six operations on sixteen patients. Of the latter, seven were well in two weeks; four in three weeks; two in four weeks; one in five weeks; one in ten weeks, while one had not recovered in six months. In view of the often long persistence of these cases, the results obtained are gratifying and such as should induce us to give the claims of the proceeding due consideration; especially is this so when we know that the operation is endorsed and practised by so eminent a pathologist as Billroth. The operation is best restricted to those cases where the gland has been long enlarged without change of consistence, and where the tissural connections are free.

Dr. WILLIAM ROBERTS treats in the next article of *Exploring and Tapping* by means of a modified hypodermic syringe. Various sized canulas are used, and should the evacuation go on slowly we are advised to attach an India-rubber tube, filled with water, to the base of the canula and allow the accumulation to be emptied by the siphon while the patient lies comfortably in bed. Dr. Roberts has also found that small portions of semisolid tumours can be coaxed through the canula into the barrel of the syringe by pumping, and thus made available for microscopic inspection; we would only say in passing that semisolid tumours are very apt to be excited into much increased activity by any method of exploration. Illustrations of the instruments are given.

Notes on Syphilis, by S. M. BRADLEY, F.R.C.S., are continued from the second volume of the Manchester Reports, and two cases are reported in which very mild secondary symptoms followed sores which were unaccompanied with induration or multiple adenopathy. From this text is argued the unity of the syphilitic poison, which it is thought important to establish as a step towards proving that syphilis may be converted into struma, cancer, etc. A little further on is recorded a case of bubon d'emblée, or rather a case in which the initial lesion in a woman was not discovered. By reasoning, which we confess to be beyond our powers, Mr. Bradley argues that, admitting the fact of bubon d'emblée, which he takes it for granted has been established by his case just cited, we must admit the unity of syphilis. Why? Because "if it is possible to infect the system with syphilis through an unbroken cuticle, it must be possible to infect the system through *any* kind of local sore," the conclusion is certainly true, *provided* true syphilitic virus is brought into contact with the sore, nor did we know that any one denied the fact, but Mr. B.'s forte appears to lie in setting up lay figures which he batters like a veritable Quixote.

Mr. GEORGE SOUTHAM, Surgeon to the Manchester Royal Infirmary, narrates an instance of *Dislocation of the Patella on its Edge* produced in the person of

a man of twenty, by wrestling. The luxation was reduced by bending the rigid limb, after the administration of chloroform; but it was found necessary to apply an elastic knee-cap for some time afterwards to counteract the relaxation of the ligaments. Reference is made to the literature of this rare form of accident and the article though short is one of interest.

Next in order is a case of *Ligature of Subclavian Artery for Axillary Aneurism*, by J. W. STOCKS of the Salford Hospital. After the failure of prolonged attempts to effect a cure by pressure, the vessel was ligated in its third part by a carbolized catgut ligature and dressed antiseptically. The patient died on the twelfth day from asthenia with some solidification of one lung though the pleura was uninjured by the operation. The point of special interest, in the case is the fact that though the artery was closely constricted above the aneurism and filled with a fibrinous plug, the ligature itself had disappeared entirely, thus furnishing another instance in proof of the value of carbolized catgut.

JAMES ROSS, M.D., writes upon *The Origin of Cancer*, taking it for granted that there always exists an hereditary predisposition and that it springs neither from contagion nor inoculation. Dr. Ross states that his object is "to show that cancer may have been developed from innocent epithelial growths, by continued irritation acting upon these growths as they appear in a succession of individuals, and causing them to deviate further and further from healthy tissues." This semi-Darwinian position is supported by specious reasoning, which, however, does not admit of abbreviation.

Mr. DAVID J. HAMILTON, of the Northern Hospital, Liverpool, gives some lucid directions for the application of *Some of the More Recent Methods of Treating Wounds on Antiseptic Principles*, founded upon the observation of more than three thousand cases. An ardent admirer of the system, he thinks the field of operative surgery has been enlarged by its introduction, and that with its skilful and universal application pyæmia and erysipelas will become things of the past. We are warned against allowing the stronger solutions of the acid to touch the raw surfaces, lest we destroy not only the poisonous atmospheric germs, but the vitality of the normal plasma itself. The whole system may be condensed into a few sentences; close the wound after washing it with a weak solution; protect it from direct contact with the acid which should be placed outside the protective so that an atmosphere of carbolic acid will surround the part, and germs of disease must first pass through it before they can reach the wound; all the dressing must be done under a carbolized spray from some form of atomizer. As will be seen the system(!) is based upon the supposition that man is only defiled from without, never from that which is within.

We notice next an interesting case by Mr. EDWARD LUND, Surgeon to the Manchester Royal Infirmary, where *A Knife was Swallowed and Passed through the Abdominal Walls* nine weeks afterwards. A female twenty-six years old, during an attack of delirium tremens, swallowed a dessert knife, the metal part of which measured six inches and a half. Eight weeks later a globular swelling made its appearance in the right side nearly on a level with the umbilicus, and the sharp edge of a foreign body could be felt distending the skin, which was freely movable over the tumour. After some days the blade of the knife protruded through the skin, and was easily removed by slight traction without additional incision. The ivory handle had been entirely digested and the extremity of the blade was rendered very thin by the action of the gastric juice. The nervous shock was considerable at the time of the removal of the offending body, but a good recovery was made without the formation of a gastric fistula.

The next paper by E. R. BICKERSTETH, Surgeon to the Liverpool Royal Infirmary, is also one of very great interest, being the history of a case of *Gluteal Aneurism*, which occurred in the person of a seaman who had three years previously, in Japan, fallen upon a sheath knife. Severe bleeding had occurred at the time of the accident, but the small wound being closed with sutures rapidly healed, and an extensive aneurism resulted. Three weeks before his arrival at Liverpool from Rotterdam the old cicatrix burst, and a quart of blood was lost; but the wound again healed. When seen by Mr. Bickersteth a pulsating tumour, the size of a child's head, existed in the right buttock, and there was no doubt about the diagnosis. Relying upon the aortic tourniquet to control the hemorrhage, on the 21st of March, Mr. B. made an incision into the sac nine inches long, from the anterior crest of the ilium to the tuberosity of the ischium, and, having turned out the clots, found the gluteal artery cut across at its point of emergence from the pelvis. With some difficulty carbolized catgut ligatures were applied to both ends of the vessel, and the large wound was brought together with many points of suture. On the 22d day of April, the patient left the hospital well, to return to his duties. We congratulate Mr. Bickersteth on this exceedingly happy termination to so serious a case, and think with him that the aortic compressor affords a very valuable aid, which those who meet with similar cases will do well to avail themselves of.

We deem it our duty in this connection to refer to the case published in the eighth volume of *Saint Bartholomew's Hospital Reports* (see preceding number of this Journal, p. 195), by Mr. Holden, where fatal secondary hemorrhage followed the ligature of the femoral artery by a carbolized catgut ligature, after extensive suppuration in the wound which was treated on antiseptic principles.

In some *Remarks upon the Shape of English Skulls*, Mr. BRADLEY tells us that his observation of European skulls has abundantly confirmed the view of Prof. Owen advanced some years since, that the marked uniformity evident in West African skulls can be fairly considered to depend upon the uniformity of pursuits in that locality; but Mr. Bradley concludes that the effects of civilization are evident even in the most debased and vicious portions of the community, for the heads of sixty-six prisoners in the Manchester gaol, examined by him, presented very marked variations.

Mr. GEORGE E. WALKER, Surgeon to St. Paul's Hospital, Liverpool, follows with *Cases of Night Blindness and detached Retina*, two of each kind being narrated. Arguing from the fact demonstrated by Dr. Brown-Séquard some years ago, that strychnia dilates the capillaries of the spinal cord, Mr. Walker thought that the same effect might be produced in the eye ground when the circulation is known to be sluggish, and accordingly tried the remedy both by the mouth and dropped into the conjunctival sac, as he thinks, with some benefit, though to us the results obtained seem somewhat indefinite.

D. LLOYD ROBERTS, M.D., F.R.C.P. (Lond.), records *A Case of Cyst removed by Abdominal Section*, which had no connection with either the uterus or ovaries. It was covered with peritoneum, being bound down by it posteriorly; there was no pedicle, but an abundant vascular supply was derived directly from the investing serous membrane. Catgut ligatures were applied to the divided vessels, and the patient made a good recovery. The cyst was filled with a clear colourless fluid, feebly albuminous, with a specific gravity of 1004. The tumour weighed $17\frac{3}{4}$ pounds, and was regarded by Dr. Roberts as a non fecundated ovule which had escaped into the abdominal cavity.

Another paper entitled, *Case of a Foreign Body in the Bladder with Stricture of the Urethra*, by Mr. LUND, concludes the surgical essays. An engineer

aged thirty-three, had suffered from stricture for thirteen years, and for the last four had been in the habit of passing bougies himself. Having used a flexible No. 3, instead of a number 4, while the bladder was very full, the bougie slipped from his grasp and disappeared, the ivory knob remaining in his hand; after five days he began to experience pain upon urinating, which increased until the advice of a surgeon was sought. Mr. Lund, aided by the history of the case, detected a soft foreign body in the bladder, and as soon afterwards as the business of the patient permitted, undertook an operation for its removal. Six ounces of water were first injected into the bladder through a small catheter, and the stricture was split by a Holt's dilator. A small sized Coxeter's lithotrite was then introduced, but the foreign body could not be felt—ultimately, the bladder having been partly emptied, the offending substance was found, caught between the blades of the lithotrite and easily withdrawn entire, there being very little deposit on it. The patient was treated as recommended by Mr. Holt for a ruptured urethra, and did well until the fourth day, when, as Mr. Lund thinks, owing to imprudent exertion, severe urethral fever was developed, which went on to the formation of pyæmic abscesses. After a serious illness, prolonged through five months, the patient recovered with the stricture cured. The case is interesting as an illustration of that connection between urethral fever and pyæmia which has attracted the notice of surgeons for some years back. We ourselves would have preferred passing a small staff into the bladder, and removing the foreign body by an external incision, to dragging it through an already lacerated urethra, and can feel no surprise that the latter proceeding was followed by such severe symptoms.

A *Table of Major Operations* performed during twelve months at six hospitals in Liverpool and Manchester, possesses no value and requires no comment.

In commenting upon the volume of last year we expressed the hope that such a field as Manchester, with improved tillage, would yield better fruit, but it would seem that the efforts of the Lancashire surgeons have been directed to increasing the size of their plot rather than to improving the opportunities they already had. To form an imposing annual volume out of short articles or reports of solitary cases, which would find their fitting place in a weekly journal, seems but a poor policy, and one that cannot long survive, no matter how well supported by thick paper and well-leaded type.

S. A.

ART. XVIII.—*Fourth Annual Report of the State Board of Health of Massachusetts.* January, 1873. 8vo. pp. xiii., 473. Boston, 1873.

THOSE readers who retain any recollection of our remarks upon the reports preceding this one, will hardly need to be told that the present volume is a work of great value and extreme interest. The composition of the Board is the same as at the issue of the third report, and with but one exception, the same as the year previous. Dr. Henry I. Bowditch as Chairman, and Dr. George Derby as Secretary, again exhibit their peculiar adaptedness to their positions. As in previous reports, investigations of particular subjects have been committed to men of known eminence in their several departments. Experience and fitness thus continue to govern the constitution and the appointments of the Board.

In their general report, the Board briefly state the principal matters that have engaged their attention during the past year, advert to the results of former

legislation and suggest additional enactments; and direct the notice of the legislature to the essays and reports on special subjects, which have been prepared under their direction.

The first and longest of these papers was prepared by Prof. WM. R. NICHOLS, of the Massachusetts Institute of Technology, and Dr. DERBY. It is in response to a legislative order instructing the Board to investigate the subject of *Sewerage, Sewage, Pollution of Streams, and the Water-supply of Towns*. It was requested that the consideration of the sewage question should embrace, first, utilization as a fertilizer; second, the sanitary results of pouring sewage into the waters of the State; third, the increasing joint use of the water-courses for sewers and as sources of supply for domestic use. Upon these points it was requested that the views of the Board should be fully presented, together with such results of foreign experiment or observation as might be pertinent. The essay elicited by this vote is the first systematic and exhaustive treatment of the subject that has appeared in these volumes, though frequent references to the questions involved have before occurred. As one of the great social problems of our time both in a sanitary and an economic point of view, the disposal of sewage demands the fullest consideration. Every year the increasing density of population adds to the gravity and magnitude of the question. As connected with the purity of our water-supply, the subject is already one of vital moment to our own city. That the meeting of the different requirements of the problem involves great difficulties, renders it all the more important that attention should at once be given to it.

Reference is made, in the paper before us, to the so-called "dry-earth system." While admitted to be practicable and excellent, in certain circumstances and on a limited scale, this plan is shown to be utterly inapplicable and inadequate to the necessities of large cities. No practically obtainable quantity of dry earth would suffice to deodourize and absorb the enormous liquid sewage of a city. Neither could the earth be dried or removed at reasonable cost. The actual excretions alone of each human body would require four or five pounds of earth daily. This in a city of 100,000 inhabitants would amount to 250 tons daily; and this to be distributed, and re-collected, among say 10,000 houses. Even if otherwise practicable, the care and intelligence necessary to the success of this method could not be expected among the lowest classes. We are glad that the Massachusetts Board have applied the touchstone of common sense to the extravagant pretensions of some advocates of this plan, and have shown the utter folly of offering it as a means of relief to large cities. In connection with the detached privies common near country houses and in small villages, the dry-earth system has real advantages. Too often, however, in places where otherwise it would be desirable, the amount of labour required to carry it on will be a fatal objection to its use.

While commending the use of trapped water-closets and waste-pipes emptying into close sewers, the report points out the need of some device to prevent that escape of sewer-gas into houses, which, under certain circumstances, will occur in spite of the best traps. To obviate this trouble it is recommended that the main perpendicular sewer-pipe of each house be carried up, above the roof, there to be freely open at the top. If this be impracticable in old houses, a small lead pipe connecting the soil pipe with the upper air will generally answer the purpose. If such an arrangement were made in all houses, pressure would be equalized throughout the whole system of sewers. The sudden influx of water from the streets or the setting back of tide-water from the outlets, would no longer cause foul air to bubble up through every water-closet, since the gases would find free egress and immediate dilution among the rapid cur-

rents of the upper air. Of course, however, the usual traps would be retained at all lower openings into the sewer-pipes.

Different methods of disposing of ashes and kitchen refuse are mentioned, but no suggestions are offered upon this troublesome matter.

To the question, what is in our country the best practicable disposition to be made of the sewage of cities? the answer given is, its discharge into tide-waters or into running streams. To the apparent wastefulness of this course it is replied that the utilization of the material costs more than the value of the product obtained. In many cases, however, the necessity of preserving the water-courses from injurious and offensive contamination imperatively demands a partial purification of the fluids which are poured into them. Here, therefore, processes not warranted by the mere money return may be the means of recovering a portion of the cost rendered necessary upon other grounds. Recognizing fully the great importance and the many aspects of the whole subject, our writers state their belief, founded on thorough investigation and after observation of the varied experiments made of late in England, that sewage may be so treated chemically as that the subsequent addition of its liquid residue to rivers shall not destroy the fish or render the waters offensive or unfit for any purpose except drinking. The expense of such process, if not fully covered by the value of the resulting fertilizers, will yet be reduced to something moderate. As cities and towns increase in number and in population, especially along the borders of our rivers, the contamination of the water, hitherto comparatively slight and tolerable, will become unbearable unless some efficient system of treatment be adopted. Already, indeed, some streams have become a nuisance, near large cities; and in many communities serious anxiety is felt in view of the yearly augmented pollution of the water-supply. It is obvious that the Massachusetts Board have not begun to agitate this question one moment too soon.

Of many plans investigated and described in this paper, for separating the offensive material from sewage before allowing it to enter the rivers, the preference is given to the process technically known as intermittent filtration. By it, it is believed the rivers would remain inoffensive, while vast amounts of fertilizing matter would be secured for agriculture. To cities upon tide-water, it is only recommended that their sewers be extended out sufficiently far to meet a strong current.

To show the exact amount and kind of impurity caused in running streams by the admixture of sewage, minute and careful analyses have been made of water from different points in several Massachusetts rivers, whose shores are most thickly covered with factory towns. The amount of adventitious matter found, is less than would have been expected. Naturally, it varies much at different times—the same stream which is practically pure during spring freshets, is very foul during midsummer droughts. The Board believe that with only reasonable care and cleanliness on the part of the dwellers on their banks, many of these rivers may for many years retain sufficient purity for most purposes, without alteration or diversion of the sewage.

Much of the foul material borne into the streams is deposited on the bottom; some undergoes chemical change of various kinds. The popular notion, that no matter how much filth enters a running stream, it is all destroyed or transformed before floating many miles by oxidation, is, we are told, more consolatory than correct. Some such purification does occur during the seaward flow of contaminated rivers; but is by no means as rapid or as complete as has been believed.

For supplies of pure water for domestic purposes, the Board recommend

recourse to the lakes and ponds so thickly scattered over New England. They advert to the singular abundance and purity of these reservoirs, and forcibly urge the policy of preserving the woodlands that now generally surround them, and of planting new forests upon tracts not available for agriculture, to replace those destroyed in thoughtlessness or cupidity. They desire that the people be made to realize the importance of preserving with jealous care the purity of these fountains.

That the people may hear both sides of an important question, we find, from the pen of Hon. P. E. ALDRICH, a member of the Board, *Additional Analysis of Evidence concerning Intoxicating Liquors*, with a statement of arguments and evidence against encouraging or permitting the sale of light wines and beer. Mr. Aldrich holds opinions directly opposed to those so ably advocated in a former report by Dr. Bowditch. The doctor assumed that men would use stimulants; but that if freely supplied with light and pure wines and beers, they would cease to crave or to use strong liquors. The present writer maintains on the contrary, that people beginning with the lighter potations finally pass to the stronger; and that men once possessed with the craving for spirits are never satisfied again with the weaker beverage. His argument is largely founded upon testimony as to results which followed in Great Britain from the passage of an act favouring the opening of beer-houses. The testimony was elicited by a committee on intemperance, appointed by the lower house of convocation of the province of Canterbury. It was the decided conviction of the committee from the evidence brought before them, that among the fourteen million people comprised in their province, cheap beer had not only failed to supplant spirits, but had unquestionably aggravated the evils it was designed to alleviate. It should, however, be borne in mind that there are other causes in action which may be responsible for that increased intemperance which the committee attribute to cheap beer. The writer of the paper before us, unlike Dr. Bowditch, believes in the right and policy of suppressing by law all sale of stimulants by the glass. Besides the English evidence, he quotes numerous brief and general utterances of various American clergymen, lawyers, and physicians, which support his own views, though giving little or no ground or reason for their opinions.

The increase of intemperance in France should hardly be attributed to cheapness of light wines, to the ignoring of all the influences which for many years have been active in that unfortunate land. If it be true, as alleged, that the wine-growing districts of our own land exhibit increased intemperance and an increased demand for strong liquors, the facts must go far to support the view of the party represented by Mr. Aldrich.

The report by Dr. H. K. OLIVER upon *The Character of Substances used for Flavouring Articles of Food and Drink*, should be read by all housekeepers. It was found that an oil of bitter almonds, containing an alarming proportion of prussic acid, is in common use by confectioners, in a very concentrated form. The danger is augmented by the variable proportion of the acid in different samples. The highest authorities state that the desired flavour is not dependent at all upon the presence of the poison. Of 150 pounds imported into Boston yearly, one-third was used by three wholesale druggists, and nearly all the remainder by a manufacturer of patent medicines. An artificial imitation of the oil, nitro-benzol, used for soaps, and possibly to some extent by confectioners, is a still more deadly poison, though free from prussic acid.

Artificial fruit-essences are largely used for candies, and in soda-water syrups used in the country and at second class shops in the cities. Sickness has been traced to the use of confections thus flavoured.

Jellies, bearing the names of various fruits, are largely artificial. If in this country we escape articles utterly destitute of all fruit, it is because the cheapness of apples affords a convenient base. By far the larger part of the jellies sold in our shops are made of apples, flavoured and coloured to resemble other fruits. The use of essences, ethers, and an immense variety of drugs, in making artificial liquors or in flavouring and improving crude spirits, has long obtained in Massachusetts as elsewhere. The Board believe, however, that such adulteration is, in the large cities, nearly confined to the lowest class of retailers, but unfortunately is a little less rare in the country towns. Beer and ale are found to be free from harmful ingredients.

Extract of vanilla, even when purely made, has been known to undergo poisonous change when long kept.

An admirable practical paper on the *Drainage for Health*, of cellars and yards and the construction and care of wells, sinks, and sewers, should be read by every householder in the rural districts.

Dr. EDWARD JARVIS contributes a paper worthy of his reputation, upon *Infant Mortality*. The expositions given of the influence of food, of locality of residence, of social customs and fashions, and of poverty, ignorance, and prejudice upon infant vitality, are as concise as they are truthful and complete.

The next article is a curious and valuable essay by Dr. GEORGE DERBY upon the *Food of the People of Massachusetts*. It is assumed that experience and observation rather than theoretical considerations should guide us in estimating the value of food. The fact is also noticed, that while a strong man, living in a pure atmosphere, can maintain robust health on a sufficiency of almost any kind of food, yet that to the large numbers living in confined air, to the feebly organized, and to women and children, a choice between different articles of diet may be a matter of supreme importance. Quotations are made from the reports of physicians throughout the State as to the sufficiency, variety, and character of the popular dietary in their districts. These show that to thousands of families, bad cooking, excessive use of pastry and of fried food, poor bread, and sometimes a preponderance of salted meats, are the foes in the household that are accountable for much ill health. Too little variety in diet is thought to be a common fault in both city and country. Men will pine and sicken upon a regimen theoretically perfect if long unvaried. Dr. Derby deprecates in strong terms the enormous consumption of trashy and indigestible pies. He also refers forcibly to the deplorable American habit of bolting the food in the shortest possible time. The excessive use of tea, often made especially harmful by long boiling, is believed to be almost as prevalent and hurtful among the working women of our cities as it is described to be in England by recent writers. The daily consumption of several pints of this potent decoction, to the partial exclusion of nutritious food, is believed to be the frequent cause of serious nervous disturbance and of general ill health.

In a paper called *Analysis of a Correspondence on some of the Causes or Antecedents of Consumption*, Dr. BOWDITCH pursues the investigation of a subject to which under different aspects he has devoted much attention for many years. Printed questions have elicited replies from all parts of the State and from other States and countries. Taken together they form a considerable body of opinion upon a variety of questions connected with this most formidable of diseases. We are interested to learn that Dr. Bowditch hopes to publish at some future time his views on the prevention of consumption.

Prof. H. B. HILL continues in this volume the researches made by order of the Board into the *Adulterations and Impurities of Food*. Twelve samples of

pickles from different sources were examined, and ten of them found to contain sulphate of copper.

In an article upon *The Homes of the Poor in our Cities*, Dr. F. W. DRAPER describes things as he found them in the poorer quarters of eight cities. In all were specimens of every possible fault and evil in the dwellings of the poor. The gloomy picture is brightened, however, by accounts of the excellent provision made by several large manufacturing corporations in the way of homes for their operatives, in which health, comfort, decency, and self-respect are secured to all. That such pestilent holes as disgrace hundreds of our large cities should be allowed to exist for one day, is a reproach alike to worldly wisdom and to morality. Not only the sense of right, but an enlightened regard both to municipal and to national prosperity require that the poor should be enabled and encouraged to live decently and in consonance with the laws of health.

We are certain that it is for the interest of every city to look closely after the health and comfort of its humblest inhabitants. No less sure is it that the well-being of the nation at large requires and warrants that the cities be held closely to their duty. This is a government by the people, and we cannot afford to allow thousands of voters to experience the degrading influences of filth and squalor. We welcome this paper as one well adapted to awaken the public to a sense of duty. The evils depicted are to be found in all our cities. In regard to prevention and cure, Dr. Draper states that ample, or even excessive, legislation already exists in Massachusetts. There seems, however, to be a lack of practical methods of enforcement, and a want of public interest.

In concluding this brief sketch of the report we cannot refrain from again commending the character of the work. There is scarcely one paper but should interest and instruct any intelligent reader. Taken together the annual volumes form no mean introduction to the study of social science and public hygiene.

B. L. R.

ART. XIX.—*Second Annual Report of the Board of Health of the Health Department, City of New York*, April 11, 1871, to April 10, 1872. 8vo. pp. 408. New York, 1872.

THE general or introductory report of this volume sets forth briefly the aims and labours of the board, and the success or failure of its various endeavours. The condition of the so-called tenement houses is considered by the President to be one of the points most worthy of attention. More than one-half the population of the city inhabit these dwellings. As a witness that the board has not worked in vain, it is found that the mortality in the worst of these has fallen off 15 per cent. during the last four years. In some instances where thorough reconstruction was compelled, the death-rate was reduced 75 per cent. Trades or manufacturing processes injurious to public health have also received constant supervision. One extremely important work has been the underdraining of extensive tracts in the upper part of the island to fit them for occupancy. This one manifestation of foresight has doubtless saved thousands of lives. Reference is made to the extra labour thrown upon the officers by the epidemic of smallpox. So far as power and authority would allow, these gentlemen seem to have discharged their duties admirably.

The same suggestion is made as to the outlets of sewers, that we have noticed

in the Massachusetts report, viz., that these should be carried well out into the tidal currents. At present the accumulations near the mouths of sewers are exposed at low tide. The lamentable waste of fertilizing material under the present system, and the consequent inevitable exhaustion of the most productive soils at last, are forcibly set forth. It is only in the sub-report made by the engineer, however, that we find any attempt to show how this waste can be avoided. The suggestion is, to have immense basins in the rivers at sewer outlets, in which the more solid matters should accumulate. Three million tons is the amount estimated to be deposited in, and "readily removed" from, these receptacles. How these basins are to coexist with shipping at the wharves, and how emptied in a way to save contents, we are not told.

The removal of garbage and ashes seems about as difficult, in practice, in New York as elsewhere. It is recommended to be placed under the immediate supervision of the police. The slaughter-houses are said to be reasonably well managed; but sufficient evil attaches to justify the recommendation of a grand abattoir. At present the offal from the different establishments is conveyed to a large floating arrangement, moored at a wharf all day, and at night towed out into the stream where its load is subjected to the usual processes of fat-rendering. This plan, though a great improvement on former ones, is obviously not faultless.

The over-crowding of the poor, in the tenement houses, is said to be worse than in any other civilized city. Moreover, in spite of all the efforts of the board, the evil is increasing. The board asks for a modification of its powers, so that it shall be able to order and compel the reconstruction of houses radically faulty. Heretofore the only course has been to compel their vacation, which might, or might not, lead to reconstruction. In some districts of the lower end of the island, lofty and substantial warehouses are being vacated, owing to the movement of business in other directions. It is urgently advised that such buildings be at once, and as rapidly as they become empty, transformed into well-arranged tenements, provided with every known facility for preserving health, and for avoiding the causes of pestilence and misery among the thousands who will seek to inhabit them. Even were it possible to provide these teeming multitudes with country homes, and to take the men to and from their city work by cheap and rapid trains, the greater proportion would still cling to the courts and alleys to which they have always been accustomed. What can be done and ought to be done, and what the health authorities strenuously labour for, is to render these immense human hives decent, airy, light, properly drained, and capable of cleanliness. It is certainly more humane, and also more economical in the end, to make the outlay needed to transform these deserted warehouses into model tenements at once, rather than to wait until the terrible mortality, sure to follow their occupancy unchanged and unimproved, shall affright the city and compel their vacation.

As seems to be the case in all our large cities the work of the board is impeded and nullified by want of authority, and by the failure of citizens and courts to enforce the laws. Indifference, unfaithfulness, and corruption, are met at every turn.

Want of power was peculiarly felt in the efforts made to restrict and destroy the epidemic of smallpox. Under all difficulties, however, the officials of the Health Office seem to have worked well and faithfully. The utterly faithless manner in which the street cleaning has been neglected, and the wretched condition of pavements, have been sources of disease fully appreciated by the board though little under their control.

With a view especially to the prevention of a cholera epidemic the tenemen

houses were twice, during the spring and summer of 1871, thoroughly inspected, cleaned, and whitewashed; drains and privies repaired and disinfected, and everything done that was possible to lessen the dangerous unwholesomeness inseparable from bad construction and overcrowding.

The Sanitary Inspector and Superintendent presents a report which introduces brief reports from each one of the local district inspectors. There are nineteen of these, each dealing with matters affecting the sanitary condition of the writer's own district: Written by medical men, all evince interest and intelligence. Several deal at considerable length with sanitary questions which happened to become especially prominent in their districts. Inspector H. R. Stiles, M.D., gives an exceedingly instructive account of some of the large tenement houses in his district. Exact details of the extent and character of the dilapidations, imperfections, and faults found in these, with a statement of the rents received for building and for rooms, are first presented; then follows an account of the changes and improvements made by the owners under the advice and supervision of the inspector, with cost of alterations, and statements of rents subsequently received. The gratifying results have been, not only vast additions to the health and comfort of the tenants, but increased income to the proprietors. Thus we are told that while these gentlemen began sullenly, and only under threat of having their houses closed, they ended by being convinced the change was for their good as well as the tenants', and willing cheerfully to continue the good work in other quarters.

One remark made by superintendent Moreau Morris, M.D., is well worth repeating and remembering. It is not in the dwellings of the poor and ignorant only, that we find the laws of health ignored and broken. In mansions of wealth and luxury, and in counting-rooms dealing with extended commerce, we may often notice extraordinary neglect of the plainest conditions of health. Especially in the matters of overheating our houses, and closely confining the stifling blasts from the furnaces, and in rigorously excluding the sunlight, do our countrymen sin grievously.

A single manifestation of one of the crying evils in our time and country—bad, dishonest, and unskilful work by half-taught and faithless mechanics—is signalized by Dr. Morris as responsible for an immense amount of disease and death. Bad plumbing, is the frequent cause of deadly sewer-gas pervading and poisoning the air of our houses.

Attention is directed to the sanitary necessity of thorough drainage in all wet and springy regions. It is not enough that the surface-water and sewage shall be removed. This may be well done, and yet the soil left saturated with moisture. Deep and substantial culverts, especially where brooks and springs have been filled up, are of the greatest importance.

The report on vital statistics opens with an admission of the discouraging incompleteness of the returns made of births and marriages. Clergymen are required by law, and under penalties, to report every marriage; yet many of them fail to do so. Of the births it is estimated that only two-thirds are registered.

The mortality tables are exceedingly full, viewing the facts under the most varied relations.

A table of great interest exhibits the population, annual mortality, and death-rate, of some seventy American, and over one hundred foreign cities. Some of the death-rates, by their palpably absurd inadequacy, point to imperfect registration. It is probably fair to assume, however, that the percentage is nowhere overstated. Some of these are as follows: New York 28.6 (28.6 deaths to each 1000 inhabitants), Brooklyn 25.9, Philadelphia 22.9 (increased

since to 26), St. Louis 16.9, Chicago 23.3, Boston 23.5, New Orleans 29.2, Richmond 30.4, Vicksburg 41.8, Memphis 46.1, Montréal 36.9. Paris shows for the same year—1871—the great mortality of 54.7; Berlin 38.9; in both of these, the figures are larger than before the war.

The sanitary differences of different parts of the city are well shown by death-rates in each ward.

The term "typho-malarial" is adopted by the compiler as designating a real variety of fever, non-contagious, lacking the pathognomonic traits of typhoid, and dependent on malaria as its cause. He, however, seems also to admit the possibility of an actual coexistence or combination of the two fevers, typhoid and remittent; and would extend the name to include this also.

Cholera infantum as a name for disease, is rejected from these reports from a conviction that it is used with great vagueness; while apparently infant mortality from bowel complaints is principally reported under the name of diarrhœa.

A table showing the deaths "directly or remotely due to intemperance," seems to be curiously and uselessly elaborate. Some one hundred and twenty disease-headings from "accident" to "uremia," are set forth as the final weapons by which intemperance has slain 556 persons, of fourteen specified nationalities and stated age, sex, and civil condition. Here again we find a needless profusion of trivial distinctions and subdivisions. "Bright's disease" alone, figures as the cause (secondary) of 61 deaths from intemperance, while "Bright's disease" with eleven distinct complications, accounts for 36 more. Nearly as many varieties of liver disease are enumerated.

A table showing the occupations of these 556 victims seems to us utterly useless. Even if there were not a large proportion scarcely assignable to any trade or calling, such information would be of no avail without knowledge of the comparative numbers following each avocation.

Scurvy appeared as an endemic in the Lunatic Asylum on Blackwell's Island. It is attributed to "an insufficiency of antiscorbutic food, and a lack of attendance." We hope this experience may prove a warning to the authorities of other cities not to carry their economy too far. Dr. Russel justly remarks in this connection, "An abundance and variety of the very best food is now recognized as an essential element in the treatment of the insane."

Attention is directed to the singular disproportion between the deaths by cancer in the native and the foreign born. Four or five times as many foreign born as natives, in proportion to respective total mortality, die of cancer in New York. The U. S. census, we believe, indicates a discrepancy about half as great in the same direction. The fact that this disease is one of adult life, accounts probably for part of the difference between Americans and foreigners.

The mortality by phthisis varies in different wards from 11.2 to 19.4. The excess of phthisis mortality in the Irish and German citizens—32.5 and 27.9—is also partly dependent on age; but we believe not wholly by any means. As here presented the deaths of the foreign born to the native, by phthisis, are as 6.5 to 2.8.

Curiously minute and elaborate tables are presented, giving a complete history of the fatal accidents connected with the Orange procession riot of July 12th, 1871. Of the fifty lives lost, three-fourths are believed to have been those of persons wholly innocent of any mischievous intentions.

Very full details of suicides are presented, from which we learn that Paris-green is the favourite poison used; and indeed stands fourth in the list of all means of self-destruction, being preceded by shooting, stabbing, and hanging.

The report of the Deputy Register of Records exhibits the forms and blanks

in use. An excellent form for a condensed weekly statement of mortality includes a full record of meteorological conditions, both absolute and, as regards temperature and humidity, compared with means of corresponding days for ten years past.

Special reports of considerable value are presented. One upon smallpox details the system pursued to secure general vaccination, and the method in which cases of the disease were dealt with. Judging by the account given us, the epidemic was as vigorously and effectively fought as it could be with the limited powers of the board and amid the unfavourable circumstances of the case. As compared to the epidemic in Philadelphia, the disease in New York prevailed longer and with greater uniformity. In Philadelphia, the disease may be said to have begun in October and ended in April. In New York it prevailed from the beginning of 1871, causing 208 deaths in the first quarter, 304 in the second, 164 in the third, and 129 in the fourth. The next, or first quarter of 1872, gives 326 deaths. To all appearance the disease had not reached its highest fatality at that time; but the tables extend no further. The percentage of deaths upon cases is given as 35.58. In Philadelphia, the mortality diminished from December, 1871; and from January to February, 1872, it fell 40 per centum. The next month showed only 25 per cent. decrease, but the following—April—saw a reduction of 60 per cent. So far as we can learn, the epidemic in New York at no time became one-quarter—perhaps not one-eighth—as prevalent as in Philadelphia. The percentage of deaths to cases appears to have been slightly less in the latter city.

The N. Y. board agree with the medical profession at large in deeming the late epidemic one of peculiar virulence. They believe that vaccination from a healthy infant is, practically, the best available protection. Lymph from successful revaccinations has been known to prove non-protective, even when apparently active. Disinfection of rooms by sulphur fumes, and clothing by sulphate of zinc and carbolic acid in water, has been efficient and reliable.

A special report by Dr. Stephen Smith on the movements and condition of the tenement house population, deals with the subject in a wise and practical manner. The remedies pointed out for the existing overcrowded and unwholesome residences of the poor, are thus summed up: Improvement and reconstruction of existing tenement houses; building of "model houses;" cheap fares on the railroads; and the conversion of deserted warehouses, as before described. To secure these ends legislation is needed and is asked.

A report upon the recent epidemic of cerebro-spinal meningitis, by Dr. Moreau Morris, is well worth attention. A principal point made is the almost invariable connection of the cases with escaping sewer-gas or with foul, damp cellars. In forty-eight cases the facts of this character are briefly stated. Almost invariably we read of loose connections or broken joints in the sewer-pipes, allowing the gas to escape into the cellar.

A paper by Dr. Stephen Smith upon the sanitary influences of heat, is especially interesting and valuable for the practical suggestions towards relief from the excessive and fatal temperature of the city in July and August. The very great influence of shade trees is well explained and illustrated. In several ways, trees moderate the summer heats, besides purifying the air and neutralizing the poison that produces intermittent. Shade trees, therefore, should be planted and protected all over the city; besides being preserved throughout the State, for their influence on the general climate. The second means proposed for combating the summer heats is an unlimited supply of river water, for universal bathing, in great public baths, and for wetting and washing the entire street surface daily. Steam-pumps with a stand-pipe may be established

on the river-shore to connect with a system of pipes distinct from those for the Croton water. The saving of the latter, together with the use of the river water for power and many other purposes, would fully pay the cost of pumping, and, perhaps, even the interest on the outlay.

The paper just noticed, and several of the other reports, are illustrated by elaborate diagrams and maps.

B. L. R.

ART. XX.—*Annals of Cholera, from the Earliest Periods to the Year 1817.*

By JOHN MACPHERSON, M.D., Inspector-General of Hospitals H. M. Bengal Army. (Retired.) 8vo. pp. x., 235. London: Ranken & Co., 1872.

THE first chapter of Dr. Macpherson's book is devoted to the consideration of the literature of cholera. This is, as is well known, sufficiently voluminous, and yet comparatively little has been written concerning the early history of the disease—a fact, in view of their opportunities for its study, not creditable, he thinks, to English physicians in India. It is to supply this deficiency that he has published these *Annals*, which he says he has endeavoured to write in the impartial spirit of an historian. He therefore gives, as far as possible, the accounts of authors in their own words, allowing the reader to draw his own inferences. He, nevertheless, has a theory of his own as to the nature of cholera; and although this is elaborately stated only in an appendix, it is not difficult to see that it has influenced many of his conclusions.

In the first place, he combats the popular belief that cholera is a disease which dates only from the year 1817, by referring to the works of early writers on medicine. From the time of Hippocrates down to the commencement of the sixteenth century, there is scarcely an author who does not describe a disease, characterized by serous evacuation, suppression of urine, loss of fluid to the system, lividity of countenance, collapse, rapid recovery in some cases, protracted recovery with secondary fever in others, and by relapses.

There is, moreover, evidence that the disease was a grave one, and that many of the remedies now prescribed in cholera were employed in its treatment, and it is curious to note that the same difference of opinion existed then as now in regard to the propriety of arresting or favouring the discharges from the stomach and bowels. Among those who recommended the administration of eliminants may be mentioned Aretæus of Cappadocia, Aetius, Rhazes, Avicenna, and Ayurveda of Sucreta.

During the period, from the beginning of the sixteenth century to the year 1817, which the author next studies, epidemics of bowel affections, of considerable magnitude, appear to have been not uncommon, and there is good reason for believing that some of these were cholera. In fact, so wide spread were some of the epidemics that they gave rise, in France, to a popular rhyme,¹ which, while it embodies some sound advice, also shows what were the general impressions of the causes of the disease. It is, of course, impossible, in a brief notice, such as this, to follow Dr. Macpherson in all his investigations, and we will, therefore, content ourselves with saying that, among English physicians, Sydenham and Willis have given good descriptions of the disease,

¹ Tiens tes pattes (feet) en chaud,
Tiens vides tes boyaux (bowels),
Ne voyez pas Marguerite
Du cholera tu seras quitte.

and that the latter distinctly recognized the profound impression which is made upon the nervous system. Both Sydenham and Willis condemn the use of evacuants, although neither of them recommends that the discharges should be abruptly arrested. The former gave diluents in the early stages, but soon had recourse to laudanum, and continued its use longer than has been customary in more modern practice. Willis recommends cordials and opium.

The account which Sir John Pringle gives of the prevalence of cholera, dysentery, and fever, in the low countries, is interesting, especially with reference to Pettenkofer's theory of the origin of the first-named disease. When speaking of intermittent fever, he says: "By looking into their wells, it is easy to determine the healthiness of their villages. These wells being fed by the underground water, and being observed to sink proportionally to the drought in summer, are at once a proof and a measure of the constant exhalation of this concealed water, through the pores of the earth, occasioned by the heat of the sun." Another physician, Dr. Tralles, expressly refers the oppression of the circulation to the blood being drained of its serum, and attributes the disease to the sudden refrigeration of the body during great heat—a theory which, in some form or other, has been more or less held in all ages. We also meet with the expression rice-water evacuations—usually considered the characteristic of Indian cholera in the histories of some of these epidemics. Several epidemics of colic are also described, but it is difficult to believe that any other form of colic than that dependent upon lead-poisoning can be epidemic, and even when arising from this cause, it is not likely that it would extend further than the country in which it originally appeared.

There is also evidence of the existence of cholera in an epidemic form in India during the same period—our knowledge of it in different localities varying, of course, with the degree of intercourse between that country and Europe. The earliest accounts of the disease are furnished by the Portuguese, who speak of its occurrence in 1503, at Goa, as if it were not an unusual circumstance. Perhaps there can be no better evidence that the epidemic of 1817 was not regarded by the natives of the country as a new disease, than the fact that, during its prevalence, they went in numbers to the shrine of Oola-Beebee (Lady of the Flux), who had been worshipped as the goddess of cholera for centuries. Moreover, the existence of a tolerably acute form of the disease, in Arabia, did not escape the observation of Karsten Niebuhr¹, in 1761–63. M. de Gentil and M. Sonnerat, also give admirable descriptions of cholera as it occurred in India. Mr. Jameson, to whom we owe an account of an outbreak at Ganjam in 1781, says that the disease was so violent, and so often proved rapidly fatal, that it was, at first, attributed to poisoning, especially through the drinking water, but afterwards to vicissitudes of weather and to exposure of the troops. In 1782 we find the use of castor oil recommended by Curtis, but he evidently did not rely upon it to any great degree, for his treatment in the main consisted in the use of strong ammonia and stimulants, with some opium.

The year 1817 is one of great interest to the student of cholera; for although Dr. Macpherson has shown very clearly that the disease did not originate then, there is no doubt that it assumed, at that time, a much more aggravated form, and that epidemics have since been more frequent and severe. Another popular error which he also corrects is the belief that the epidemic of 1817 began in the Sunderbunds, or in a small way at Jessore, for in that year there was a fatal case of cholera in Fort William, in the month of March. In May and June the disease was raging epidemically in Kishnaghur and Mymensing.

¹ Voyage dans les Mers de l'Inde, 1779.

In July it was at Sonergong, in the Dacca district, and as high up the river as the large city of Patna, and it did not reach Jessore till August, and not till after the middle of the month. It broke out at Calcutta at much the same date or a few days earlier. When it first appeared at these places, although occurring later in the year than usual, it was considered, by the medical authorities, the ordinary epidemic of the season, presenting, however, symptoms of unaccustomed violence. It appears, however, to have been thought, for the first time, contagious, and it had, undoubtedly, acquired a much increased power of spreading.

In regard to the causes which led to the epidemic of 1817, Dr. Macpherson says, the most reasonable conjecture is, that the disease was intensified by the unusual weather of that year.

"In the lower and western portion of the Gangetic Valley, there was a long protraction of heavy rain (one hundred and twenty inches, or nearly double the usual amount of rain, are reported to have fallen during the year), while in the eastern part of Bengal things wore a different appearance. In that quarter, there was a deficiency of rain, and the rise of the river was four feet short of its usual height. There was, therefore, undoubtedly, the influence of unusual weather at work. We have already said, that it is known to induce attacks of illness in individuals, and also to influence the course of epidemic diseases. What further power over disease it has, no one can pretend to lay down positively. Incapable though it may be of producing a new disease, yet it may possibly be able to intensify an old one, and cholera was an old malady in Bengal, though latterly quiescent."

He shows very conclusively that it could not be attributed either to overcrowding, bad food, famine, or to filth. In reference to overcrowding, he says:—

"But no cause of such a nature existed in Bengal in 1817. We know of no great pilgrimages or assemblages there in that year. Besides, the pilgrims to Juggernath only skirt the delta of the Ganges, and the pilgrimage to Saugor Island, at the mouth of the Hooghly, is comparatively a small one. Cholera did not become epidemic till some months after the season of pilgrimage, and there is no evidence to show that in the early part of the year there was cholera at either of these places."

The methods of treatment adopted by physicians at the beginning of the epidemic do not present much novelty. The old question whether to promote the removal of the morbid secretions by means of emetics, purgatives, diluents (or in modern phrase, eliminants) or not, continued to engage attention, as in the days of Hippocrates.¹ It soon became evident to intelligent practitioners that the administration of diluents only led to waste of time—that nothing could be more dangerous than any delay in supporting the patient, and that by giving aperients and emetics in the commencement, the virulence of the disease was increased. They, therefore, usually became advocates for the early use of stimulants and opium. Were it not that the application of the actual cautery to the feet has passed out of use, and that pepper is no longer placed in the eyes of patients to rouse them from collapse, we should have little reason to congratulate ourselves on the advances made in the therapeutics of the disease.

It is noteworthy, especially in view of the theory of cholera, which Mr. Macnamara advocates, that among the general directions which were given for the avoidance of the disease, people were recommended to have their drinking

¹ In the face of this evidence, the claims to novelty which have been made for the eliminant plan of treatment by castor oil or other purgative, cannot be maintained.

water boiled. Among the exciting causes of the disease are mentioned the use of indigestible articles of food, and sleeping with the abdomen uncovered.

The reader who is interested in the subject will find the nomenclature of cholera very fully discussed in a separate chapter. The author thinks that, on the whole, the most satisfactory derivation of the word cholera is from *χολος*, the old form of *χολη* bile, and *χολερη* is from *η χολερη νοσος*, the bilious disease, or disease of bile. A curious fact in connection with the nomenclature of the disease is the corruption, by the French, of the Hindoo word *Mordesheq* or *Morshee*, into *mort de chien*, which, according to Père Martin, had taken place as early as 1702.

In an appendix "On the Analogies of Cholera Nostras and Cholera Indica," Dr. Macpherson has endeavoured to prove that these diseases are really identical, and that the only points of real difference between them is one of degree, which he does not regard as sufficient grounds for separating them, especially so long as we continue to regard *scarlatina simplex* and *scarlatina maligna* as the same disease, and are willing to regard the various manifestations of influenza as due to one cause. When speaking of the contagiousness of cholera Indica, he says, that if we admit that epidemic diarrhoea may sometimes be contagious, it is very unlikely that this should not sometimes be true of epidemic cholera nostras also. But in addition to differences as to malignity, contagiousness, and power of spreading, the prevailing belief is, that there is a specific poison present in cholera Indica. Supposing it to be established that this specific poison really exists, for this has not yet been done, then almost identical symptoms are produced in the absence and in the presence of a specific poison, which, unlike the poison of smallpox or that of typhoid fever, does not produce any specific effects.

We have endeavoured, in the preceding notice, to lay before our readers some of the most important results of Dr. Macpherson's labours, and it only remains for us to say, in conclusion, that any one to whom the book itself is accessible, will do well to read it.

J. H. H.

ART. XXI.—*Memoria Historica das Epidemias de Febre Amarella e Cholera-Morbo que têm reinado no Brasil*. Pelo Dr. JOSÉ PEREIRA REGO. Do Conselho de S. M. o Imperador, Medico da Imperial Câmara, Presidente da Academia Imperial de Medicina, etc. etc. etc., 8vo. pp. 228. Typographia Nacional. Rio de Janeiro, 1873.

Historical Memoir of the Epidemics of Yellow-fever and Cholera, which have occurred in Brazil. By Dr. JOSÉ PEREIRA REGO, President of the Imperial Academy of Medicine, etc. etc., Rio, 1873.

THE consideration of the question of cholera in South America involves the great problem of the spontaneous development of the disease in Paraguay, a doctrine which is held by many medical men in La Plata and Brazil, though it finds there as many opposers as elsewhere.

The eminent official position of the author of the monograph, the title of which is placed at the head of this article; the facilities which he most certainly enjoyed in obtaining access to reliable sources of information; his own personal opposition to the theory of generation *de novo*; and the importance of the question he discusses, certainly justify us in expecting that Dr. Rego's book

will throw new light upon the subject. In the following pages we propose to examine that portion of the work which treats of cholera in Paraguay.

Dr. Rego, discussing the first epidemic of cholera in the army, writes as follows:—

“From the perusal and analysis of all the facts that we have been able to collect, it is difficult, if not impossible, to discover the cause of its origin in the army, especially, since in view of the manner of its appearance, medical men of the staff hold the opinion that the disease was not traced to contagion, but that the unknown *quid* that produced cholera in the army was to be found in the hospitals of Itapirú or its neighborhood. Without feeling ourselves authorized to deny the facts, yet in view of the authenticated characters of the first cases occurring there, we find that it would be the first instance that science has recorded of the spontaneous development of cholera far from the places where it originated, as we are taught by the historical traditions of the epidemic.

“The occurrence of the disease in Pernambuco and its manifestation in Guanzy in 1862, without the importation of new productive elements, are additional proofs of the correctness of this view, which tends to establish an exception to the received doctrines; but even here we think the explanation is easy and admissible without doubt, for if there were not importations of new productive elements there was at least exposure to the element of the first epidemic not yet extinct, either by the exhumation of the bodies of those who died of cholera, many of which might not have been entirely consumed; or by conditions of the soil, or by the accumulation in which they were buried. But still, taking into consideration the facts that occurred on the steamer “Feixeira de Freitas,” and the subsequent development of cholera in the army, we are led to suspect that in all probability this was the first importation of the disease into the army, whence it afterwards spread to La Plata, etc. For it is generally known that the steamer “Feixeira de Freitas” left Rio during the latter days of February, with over two hundred soldiers for the seat of war, and that two days after leaving port the troops were attacked with cholera, and also, that the steamer, following its route, on entering the Parana River (Argentine Republic), and when opposite to Goya, on the 3d of March, received orders to return immediately to Santa Catherine (Brazil), where the patients were sent to a Lazaretto, etc.”

Now, Goya is a place in the Argentine Republic, situated two hundred miles distant from the locality where the armies were encamped, and before the steamer had an opportunity of communicating with them it received orders to return to Brazil, which it did without touching shore. We cannot understand how the disease could have been carried to a place by a steamer that did not come within two hundred miles of the infected locality, and which was immediately ordered back to Brazil as a safeguard to the armies. This Dr. Rego does not even attempt to explain, but remarks:—

“Let this be as it may, and dropping the discussion of such important questions, the solution of which depends upon an exact and careful appreciation of all the circumstances connected with it, we will say, that the unfortunate outbreak of cholera in the army awakened the solicitude of the general,” etc. etc., and the author then goes on to describe measures for its relief.

This is all that we find in Dr. R.'s volume to account for the appearance of the disease in the army, but Dr. R. himself furnishes us with another and no less interesting case of the development of the disease in which the cause could not be traced. We refer to the expedition of Matto Grosso, a province of Brazil, whose only communication with the world was through the Paraguay River, and which in consequence of the war was completely isolated. This province raised a small army within its boundaries, which was shut up in its own territory, and suffered dreadfully from the privations consequent upon

disease and war. Among these troops cholera appeared, and after describing the epidemic, Dr. Rego speaks thus :—

“The appearance of this epidemic in an expedition which had no contact whatever with men, or materials coming from places attacked with cholera, awakens interest in the solution of these two important questions : 1st, Was it a true epidemic of cholera or of some other disease simulating it? 2d, Did it develop by transmission or spontaneously? The first question we think is solved by the existence of the symptoms noted, which leave no doubt in the mind as to the existence of cholera; in regard to the second question, it is unsafe to form a judgment, but we may hope for a solution with more positive and reliable information. Still, preferring to leave this solution to the eye-witnesses of the epidemic, we may venture as an opinion, that seems to us plausible, that the disease was carried to Mattogrosso through the *infected atmosphere of Paraguay*,” etc. etc.

At last we have Dr. Rego expressing an opinion in conformity with the facts, and to convince him of what he merely supposes possible, we will examine his description of the invasion of Rio Janeiro, from which place, according to him, the disease is supposed to have been carried to the army.

Concerning the outbreak of cholera, in the second invasion of Rio Janeiro (the first having taken place in 1859), Dr. R. says :—

“The first and well characterized case occurred on board the steamer ‘Santa Cruz,’ which arrived at this port on the 1st of January, from Rio Grande, where, according to the papers, the disease was then raging.”

Now upon turning to page 203 we find the following description of the invasion of cholera in Rio Grande.

“The first case appeared in the city, on the 22d of January, the disease having been imported from the United States, though at that time the city was suffering from bilious and bloody diarrhœa which did not present the aspect of cholera or cholerina.”

These statements are so contradictory, that we must ask Dr. R. how is it possible that if the disease appeared in Rio Grande on the 22d of January, the steamer “Santa Cruz” could have brought it to Rio Janeiro, where it arrived the 1st of the same month?

The “Santa Cruz” was coming from Paraguay and called at Rio Grande three or four days before reaching Rio, so the steamer was at least twenty-five days in advance of the first importation to Rio Grande, how then could the cases occurring on board be traced to its stoppage at Rio Grande?

In the case of the “Feixeira de Freitas” we have a steamer carrying the disease to a port that it never reached, now in the case of the “Santa Cruz” we have another steamer carrying cholera to Rio from a port where it did not exist at the time of its departure.

However curious all this may appear, we will next see another inexplicable statement that Dr. Rego puts forth in his anxiety to import cholera to Rio from any place whatever but the proper one.

“The discovery of this case [on board the “Santa Cruz”] and of others that followed among the passengers and persons with whom the latter communicated, led many to believe that this steamer had conveyed the disease, but the existence of some sporadic cases in 1866, and the report of twenty deaths from cholerina in 1865, after the arrival of vessels from Marseilles, which were not subjected to quarantine, as the “Berthe” and “Franciscopolis”—the captain of this latter having died of cholera in September—and from other facts connected with that same period that we have related in our report to the Secretary of State in 1868, we are led to doubt such origin, and to consider the disease imported rather from Marseilles or other foreign ports.”

The italics which are our own form the best comment we can offer on this

proposition, which involves no less than the importation of cholera poison to the tropics, its remaining dormant for two years, and then developing itself by mere coincidence upon the arrival of a vessel from Paraguay with cholera on board!

The foregoing is all that we have found in Dr. Rego's book in connection with the epidemics of Paraguay, and how much he has proved, and how much remains yet to be proved, concerning the origin of the epidemic the reader will readily see for himself.

The infection of Rio Janeiro through the "Santa Cruz" coming from Paraguay, is the most important fact drawn from Dr. Rego's statements, and if from the beginning these facts had been impartially analyzed by him, he would have rendered a great service by contributing to prove the truth of what he has not been able with all the facts at his command to controvert, namely, the theory of the spontaneous development of cholera in Paraguay. E. M. E.

ART. XXII.—*On Nervous or Sick-Headache: its Varieties and Treatment.*

Two Lectures delivered at Addenbrooke's Hospital, Cambridge. By P. W. LATHAM, M.D., F.R.C.P.; Physician to the Hospital, etc. 12mo. pp. 71. Cambridge: Deighton, Bell & Co., 1873.

In the two lectures which are contained in this little volume Dr. Latham endeavours to demonstrate that the phenomena of the condition known as sick-headache or bilious headache may be produced by uncontrolled or disturbed action of the sympathetic nervous system. He was unaware when the first lecture was written that similar views had been held and enunciated by Du Bois Reymond, Möllendorff, and Wilks, and he, therefore, in the second lecture refers very fully to the respective views of these physicians. His theory may be briefly stated in his own language as follows:—

"If by fatigue, anxiety, or other depressing cause, the general tone of the body be lowered, and with it the inhibitory power of the cerebro-spinal over the sympathetic nervous system impaired, then that uncontrolled action or excitement of one or more portions of the latter takes place, causing contraction of the bloodvessels under the influence of the affected portions; that this excitement is followed by exhaustion or paralysis of the sympathetic, which is associated with dilatation of the vessel, and, if the cervical portion of the sympathetic be affected, with headache."

During the stage of excitement, or that in which the bloodvessels of the brain are contracted, we have, the author says, some marked premonitory symptoms, such as disturbances of vision, generally confined to one eye and accompanied by tingling in the extremities of the same side. If the attack is a slight one, scarcely any headache will succeed these phenomena, but in severe cases, on the other hand, the stage of passive dilatation follows so closely upon that of contraction that the premonitory symptoms may be entirely wanting. This disturbance of vision, which Dr. Latham seems to have met with more frequently than other observers, is very well described by Sir John Herschel, who gives the following account of it, in his *Familiar Lectures on Scientific Subjects*, as it occurred in his own person.

"I was sitting one morning very quietly at my breakfast-table, doing nothing and thinking of nothing, when I was startled by a singular shadowy appearance at the outside corner of the field of vision of the left eye. It gradually advanced into the field of view, and then appeared to be a pattern in straight-lined angular forms, very much in general aspect like the drawing of a fortifi-

cation, with salient and re-entering angles, bastions, and ravelins, with some suspicion of faint lines of colour between the dark lines."

In some other cases a most gorgeous colouring of these *bastions* has been described.

The author takes some pains to show that precisely similar phenomena are occasionally developed by remedies which are known to produce contraction of the minute arteries. Thus the experiments of Dr. Brunton prove that under the action of digitalis two kinds of derangement of sight were noticed, when the drug was administered in large doses. 1st. "A general mistiness of objects, such as is seen before fainting, and 2d, a large bright spot advancing before me, which sometimes resembled a ring showing prismatic colour faintly." The same appearances are described even more fully by Purkinje. Du Bois Reymond is the only author who has found during the stage of headache any contraction, or, in his own words, a tetanic condition of the muscular fibres of the arteries of the affected side of the head, or a tetanus of the cervical portion of the sympathetic of that side. To all other observers the carotid and temporal arteries of the painful side have appeared soft and relaxed.

In support of his theory that the headache depends upon the direct pressure of the enlarged vessels upon the brain, and that this enlargement is subsequent to a contraction, the author calls attention to the fact that while the premonitory symptoms of irritation are on one side of the body, the headache is on the other, which he thinks would not occur if the true pathology of the condition was neuralgia. Another fact, also sustaining his opinion, is that the headache is at once diminished when the carotid of the painful side is compressed.

The author devotes a few pages to the discussion of two of the theories which are advanced as to the nature of this disorder; the one that it is a neuralgia; the other that it depends upon gastric or hepatic derangement; neither of which he believes so fully explains all the phenomena attendant upon it as his own. In regard to treatment, he says this should vary according to the stage of the disease. When the patient is suffering from disturbed sensation, such means should be adopted as will increase the flow of blood to the head, and this can be best accomplished by posture and stimulants. The patient should lie down with his head as low as possible on the side opposite to that on which the glimmering has appeared. A glass of sherry or an appropriate dose of some one of the diffusible stimuli should be administered. During the stage of headache, if this be severe, absolute rest and quiet are enjoined. Where the exciting cause of the attack appears to be an error of diet, an emetic or purgative may relieve the symptoms. The author has also used, with advantage, hydrocyanic acid, chloroform, bromide of potassium, aromatic spirit of ammonia, and cold tea. The remedies which he recommends to be given during the intervals of the attacks are cod-liver oil, the bitter and ferruginous tonics, and strychnia. He has also used guarana, but has found it to be useful only when administered early in those cases in which the premonitory stage lasts for some little time. Where, on the other hand, the headache is developed suddenly, it is he thinks far less efficacious than many other medicines.

We have thus presented our readers as briefly as possible with the author's views in regard to the pathology and treatment of sick-headache, and it only remains for us to say that he sustains his theory with what seem to be fair and sound arguments. The book is illustrated with three plates, two coloured, taken from Dr. Airy's paper, in the *Philosophical Transactions*, "on a distinct form of Transient Hemiopsia," and the third showing the appearances seen by a person who had taken a large dose of digitalis.

J. H. H.

ART. XXIII.—*On a Hæmatozoon inhabiting Human Blood in its relation to Chyluria and other Diseases.* By T. R. LEWIS, M.B., Ass. Surgeon H. M. British Forces. 8vo. pp. 50. Calcutta, 1872.

It has long been known that certain worms, belonging to the Filaridæ, exist in the blood of dogs and other of the lower animals, though as far as we know no one has determined whence they come or whither they go, their origin or their destiny.

A disease which has been shrouded in mystery as to its cause and nature, although not infrequently recorded, is the so-called "chylous urine."

In March, 1870, Dr. Lewis discovered, whilst examining some of this "chylous urine," a hæmatoid worm in it, but carried his researches no further.

In July, 1872, whilst examining the blood of a patient suffering from diarrhœa, at the Medical College Hospital, Calcutta, he discovered in it worms of precisely the same character. To these worms, which were described in *The Lancet*, the name of *Filaria Sanguinis Hominis* has been given. The chief object of the present pamphlet is to show the connection of this worm with the disease known as chylous urine. The doctor has examined such urine associated with more or less marked hæmaturia in between 15 and 20 patients, and has found them in all cases in the excretion; in many if in not all the patients he has also detected them in the blood.

The details of several cases of this curious affection are given, but as it has never, at least that we know of, occurred in this country, it is sufficient here to refer the reader to the pamphlet itself, a memoir of 50 pages, illustrated with several wood-cuts of the hæmatozoon; the average diameter of this species of *Filaria* is that of a red corpuscle and its average length 46 times greater; i. e., it is $\frac{1}{3500}$ of an inch one way by $\frac{1}{25}$ the other.

In regard to the number of these creatures that a man is capable of giving nourishment to, Dr. Lewis, in regard to one patient, arrived, by an apparently fair calculation, at the conclusion that he was foster-mother to a progeny of 140,000! In regard to the length of time that they may live, it was found in another case that they continued to exist for two years and a half without showing any tendency to develop beyond the usual stage, so long as they remained in the circulation. Their ultimate transformation was in nowise made out. In some instances they seemed to exist in large numbers in the blood without giving rise to any symptoms, the patients believing themselves to be in good health and showing no indications of disease.

H. C. W., JR.

ART. XXIV.—*An Introduction to the Study of Clinical Medicine; being a Guide to the Investigation of Disease. For the Use of Students.* By OCTAVIUS STURGES, M.D., Cantab; F.R.C.P., formerly Registrar of Medical Cases at St. George's Hospital. 12mo. pp. 127. Philadelphia: Henry C. Lea, 1873.

THE design of this little book is to aid those pupils, and, we think the author might have very properly added, recent graduates, who having been taught the principles of medicine and surgery by means of formal lectures, find themselves embarrassed, when called upon to investigate disease at the bedside.

In this country, especially, where didactic teaching, notwithstanding the improvements lately made in the courses of some of the more advanced of our medical colleges, largely predominates over clinical, and where the student is so rarely brought in actual contact with the patient, there are many who need just the kind of assistance at the beginning of their professional career which this book proposes to give. Dr. Sturges has not attempted to present to the profession a complete work on diagnosis similar to that of Dr. Da Costa, his object being simply to point out to students a method of interrogating patients, and has therefore arranged a series of tables which are suggestive of the questions which it is proper to ask. He does not attempt to specify what each symptom may denote, but, on the other hand, endeavours so to train the student that no symptom may escape his notice. In other words, the book is intended to take the place of a clinical teacher, to impress the value of signs which students are too apt to neglect, and to provide cautions against common errors and hasty conclusions. As it is intended to supplement the teaching of the lecture-room, the student is credited with knowing what he may reasonably be supposed to have learned there or from text-books. We therefore do not find the author rehearsing the elementary facts of practical medicine, such as the topography of the viscera or their morbid anatomy, or the tests employed in examining the secretions.

We think the author has done his work well, and have no doubt the book will be a useful guide to the large class for which it was written. In a few instances indeed, especially when discussing the physical signs of disease, he pushes his desire to secure simplicity to an unwarranted extent. For example, after saying in a foot-note that a multiplicity of names leads to confusion, he adds "the expressions 'wooden' and 'amphoric' and 'cracked-pot' and 'metallic' and the like, apt as some of them are, must always remain the exclusive property of those who recognize the resemblances which these words imply." Unquestionably nothing is to be gained by needlessly increasing the number of terms, but the physician who cannot distinguish the various sounds just mentioned, and to whom they convey no idea of the condition of the lungs, is hardly fitted, in our opinion, to be entrusted with the treatment of thoracic diseases.

H. H.

ART. XXV.—*The Cerebral Convolutions of Man, etc.* By ALEXANDER ECKER, Prof. of Anatomy and Comparative Anatomy, in the University of Freiburg, Baden. Translated by Robt. T. Edes, M. D. 8vo. pp. 87. New York: D. Appleton & Co., 1873.

WE are glad to see Ecker's well-known monograph in English dress. It is doubtless the most available work on the cerebral convolutions the physician possesses, and is worthy of the honour given it by Dr. Edes, in writing so good a translation.

The object of the work, we are informed by the author, is to place in the hands of practitioners materials which will make it possible for them to find their way easily in the apparent chaos of convolutions. The pages are illustrated by diagrammatic outlines elaborately indexed, which answer to the descriptions of the convolutions and sulci in the text.

The book is essentially one for reference—not only can the reader easily turn to any particular heading, but can at a glance acquaint himself with its synonymy—a no insignificant matter in studying a subject, which even yet is

without a fixed nomenclature. The single temper-provoking feature is the disposition of the figures. Why figure 4 should be placed on page 49, when it is so badly needed on page 21, we cannot understand.

The author has so explicitly stated the scope and object of the book—and that anatomists are awaiting in return clinical material, from which a more exact knowledge of the functions of the cerebral surface may arise, that it would be manifestly unfair to complain of the omissions, which will doubtless be observed by many readers. We are of the opinion that a closer relationship with the results of clinical study, even in its present imperfect condition, would have been a very desirable addition. May we entertain the hope that, in the event of a second edition being called for, this want may be supplied. H.A.

ART. XXVI.—*Die Ohrenheilkunde der letzten 50 Jahre.* Von Dr. W. KRAMER, Geheimer Sanitätsrath. Zur Erinnerung an seine medizinisch-chirurgische Doktor Promotion, im Jahre 1823. 8vo. pp. 77. Berlin, 1873.
The Aural Surgery of the last fifty years. By Dr. W. KRAMER. Commemorative of his promotion to the Doctorate of Medicine and Surgery in 1823. Berlin, 1873.

ANY work which professed to contain the experience derived from the pursuit of an important branch of medicine or surgery for two generations, would claim our attention, but our interest is heightened when an authority so distinguished as Dr. Kramer lays before the profession the book the title of which stands at the head of this notice. And yet frankness demands the confession of our disappointment after its perusal.

That portion of the pamphlet which is devoted to a review of the past fifty years in aural surgery may be considered as an exhortation to establish a more thorough pathological anatomy of the ear, the importance of which no one doubts; but this *grain* of good advice is lost in the *chaff* of personal vituperation of all the prominent aurists of Germany, England, and America.

An otological career of fifty years, even as brilliant as that of the celebrated Kramer, will not warrant the utter rejection of the scientific investigations of Helmholtz, v. Troeltsch, Schwartze, Politzer, Voltolini, Gruber, Weber, Moos, Knapp, and Wreden, nor of the "host of other living aurists."

It is with much greater satisfaction we turn to the Appendix of this little volume, where the author has presented a series of cases illustrating the cause, treatment, and cure of many forms of deafness and tinnitus aurium. The chief cause of tinnitus in the cases under consideration was, according to the author, submucous exudation in the Eustachian tubes. The deafness in each case appeared to depend on the same cause. The treatment consists in gentle dilatation of the Eustachian tube by means of catgut bougies, $\frac{1}{4}$ mm. in diameter.

The bougie is to be inserted as often as twice or three times weekly, in those cases where speedy relief has been followed by a quick relapse. In other cases the insertion of a bougie once a week has been sufficient to allay the tinnitus and improve the hearing. In both instances the entire treatment has extended over a period of one to four months. In addition to the insertion of bougies a few drops of olive oil, or a solution of sulphate of atropia in distilled water, (0.12 to 15.0) are to be introduced into the Eustachian tube, either by anointing the bougie or by inflation.

Usually relief of the tinnitus is accompanied by improvement in hearing, in fact, the former rarely occurs without the latter, although the author calls our attention to the fact, that in five of the thirteen cases recited, the tinnitus attendant upon submucous exudation in the Eustachian tubes not unfrequently entirely ceases, without a corresponding relief in the hardness of hearing. Therefore, as the author says, the entire independence of both forms of disease is irrefutably shown, although each depends upon the same fundamental affection, and that is, exclusively, submucous exudation in the Eustachian tubes.

C. H. B.

ART. XXVII.—*Fractures of the Elbow-joint.* An Essay to which was awarded the second prize of the Boylston Medical Society, for 1873. By WALTER ELA. 8vo. pp. 57. Cambridge: Welch, Bigelow & Co., 1873.

THIS is a very well written essay, and one which shows that the author (who we understand is a second year's student in the Harvard Medical School) possesses good judgment in using, as well as industry in collecting, his materials—two qualities which unfortunately do not always go together. The most interesting part of the essay is, perhaps, that devoted to the subject of fracture of the coronoid process of the ulna; eleven cases are mentioned in which it was believed by the respective observers that this rare form of injury had occurred, but in which the diagnosis was not verified by dissection; while to the list of four specimens referred to by Prof. Hamilton three more are added, one now first described by the author himself, one referred to in Holmes's System of Surgery, and one described and figured by Bryant.

The only thing which seems to us objectionable in this essay, is the author's recommendation that in cases of injury of the elbow, anæsthesia should invariably be employed as an aid to diagnosis. This we consider quite unnecessary, and therefore undesirable.

The author's case of fractured coronoid process (complicated with an impacted fracture of the neck of the radius) is given as an appendix, and the appearances of the specimen are shown by means of a well-executed "alber-type."

J. A., JR.

ART. XXVIII.—*Clinical Lectures on Various Important Diseases. Being a Collection of the Clinical Lectures Delivered in the Medical Wards of Mercy Hospital, Chicago.* By NATHAN S. DAVIS, A.M., M.D., Professor of Principles and Practice of Medicine and Clinical Medicine in Chicago Medical College. Edited by Frank H. Davis, M.D. 12mo., pp. 263. Chicago: J. J. Spalding & Co., 1873.

THE favour with which these lectures were received upon their original appearance in the *Chicago Medical Examiner*, and the frequent application for numbers of the journal that could not be supplied, Professor Davis's son states has induced him to collect and issue them in the present form. It is, we think, to be regretted that before doing so he did not subject these lectures to a more critical examination; for although when delivered at the bedside their deficiencies may have escaped detection by the class in attendance upon the course, and they are not out of place in the columns of a medical periodical,

they are not sufficiently full to justify their publication in a more permanent form. There have been so many admirable clinical lectures published recently that these seem by comparison to be rather meagre, to be in fact mere reports of cases filled in with outline sketches of disease.

Professor Davis, while manifesting some acquaintance with the works of contemporary authors, does not seem to have accepted fully the recent advances made in therapeutics. Although cautioning his students against the excessive use of drugs, he is not himself by any means free from the reproach of occasionally giving them too liberally in cases where a knowledge of the history of the disease would seem to indicate that the patient's best chance of recovery depended upon the adoption of a non-perturbating course of treatment. The editor seems to deprecate criticism when he says that "the fact that the lectures here collected were not given in one consecutive course and reported by one amanuensis, but were delivered as parts of several annual courses in the hospital wards, will explain any want of uniformity that may be observed in the manner of writing the prescriptions or in the naming of medicines." Inasmuch as the manner of writing the prescriptions seems to have attracted the editor's attention, it is strange that he has not taken sufficient care to prevent the mingling of two languages in the same formula.

There are a few typographical errors and occasionally a mistake in construction which the editor would have done well to correct, but in other respects the way in which the book has been issued reflects credit upon the publishers.

J. H. H.

ART. XXIX.—*Fever and Cholera from a New Point of View.* By ALEXANDER SMITH, M.D. Edin., Staff Surgeon-Major; Statistical Officer to the Inspector-General of Hospitals, British Forces in India. (For private circulation.) 12mo., pp. 301. Calcutta: Wm. Smith, 1873.

IN a work which we noticed in the last number of this Journal, Mr. R. T. Lyons made an attempt to prove that the disease generally known as relapsing fever is only a form of malarial disease, modified by circumstances. Dr. Smith, the writer of the book, the title of which heads this notice, like the author to whom we have just alluded, has been for many years attached in a medical capacity to the British forces in India, and has become imbued with the same opinions. He, however, goes further than Mr. Lyons, for while the latter is unable to see any essential difference between the diseases named, the former comprehends all the non-contagious fevers in one class, which he stretches so far as to include cholera. In fact, his object in writing appears to have been to demonstrate "that cholera is simply the highest expression of form which this description of disease attains." In his pathology all these diseases originate in a morbid impression made upon the sympathetic nervous system, which gives rise to paralysis of the vaso-motor nerves, and he therefore regards the difference between cholera and simple continued fever as one only of degree; the severity of the former being due to the greater violence with which the exciting cause acts.

We cannot say that we have found the arguments by which the author endeavours to sustain his views very convincing, and we shall not attempt to make an analysis of them, especially since in doing so we should be obliged to repeat much that was said in our notice of Mr. Lyons's work. We can scarcely

be wrong in supposing that Dr. Smith and Mr. Lyons are very fair representatives of a large class, and that the views which they hold are therefore more popular in India than elsewhere. While willing to concede to them, and to other army surgeons in the British possessions in the East, the advantage derived from the opportunity which their position gives them, for comparing the phenomena of disease in different countries, we do not think they will be able to convince intelligent physicians of the complete identity of enteric fever with remittent fever, and of both these with cholera.

Entertaining the opinions that he does, it is not surprising that Dr. Smith recommends the exhibition of quinia in cholera, which should be given hypodermically whenever the stomach is too irritable to retain it. J. H. H.

ART. XXX.—*As Formações e Transformações dos Animaes Estudo sobre o Desenvolvimento normal, teratologico, e pathologico, Fundado sobre a Embryogenia comparada, a Physiologia, a Anatomia Pathologica, a Histogenia, e a Paleontologia.* Por JOSÉ JOAQUIN DA SILVA AMADO, Premiado pela escola medico-cirurgica de Lisboa em 1860, '61, '63, e '64; Preparador e Conservador do Museu d'Anatomia da mesma escola; ex-cirurgiao do banco do hospital de S. José. *Primeira Parte: Desenvolvimento normal dos animaes da fauna actual. Com duas estampas.* Lisboa: Lallemand Frères, 1872. 8vo. pp. 240.

The Formations and Transformations of Animals; a Study of their Normal, Teratological, and Pathological Development, based on comparative Embryology, Physiology, Pathological Anatomy, Histology, and Paleontology. By JOSÉ JOAQUIN DA SILVA AMADO, Rewarded by the Medico-Chirurgical School of Lisbon in 1860, '61, '63, and '64; Preparer and Curator of the Anatomical Museum of that School, etc. etc. *First Part: Normal Development of Animals of the existing Fauna, with two plates.* 8vo. pp. 240. Lisbon, 1872.

THIS volume is a well-written compilation of what has been published on animal development in German, French, English, and other languages. The author seems to have sought information from all authorities and produced a learned work. The bibliography of this volume occupies more than thirteen of the two hundred and forty pages contained in it. W. S. W. R.

ART. XXXI.—*Clinical Reports from Private Practice.* By JOHN HERBERT CLAIBORNE, A.M., M.D., one of the Vice-Presidents of the Medical Society of Virginia, etc. 8vo., pp. 424. Petersburg, Va. Jos. Van Holt Nash, 1873.

THE patient of a physician whose *clientèle* lies among the better classes of the community, presents peculiarities of constitution and temperaments not often encountered in the occupant of a hospital bed, which must, therefore, be met by some modification of the treatment adapted for the latter. We are not, however, prepared to admit that there are any set of people, no matter what their antecedents or present condition may be, in whom it is justifiable to

push depletion to the extent Dr. Claiborne recommends it. Among the cases recorded in his book, is one of a woman in puerperal convulsions, from whom he took by venesection one hundred and twelve ounces of blood in forty-eight hours, to which must be added the amount removed by leeches and cups, and that lost from the uterus during parturition, which he estimates at twenty-eight ounces. Well may he explain—

“This practice seems to border on the heroic!” And yet he adds: “Nineteen years have elapsed since this case was placed on record; time may palliate the offence with some. But I do not offer it as an apology—nor do I put up any defence for the treatment. If success were the test of merit always, I could point to the recovery of my patient as the proof of the correctness of the practice. But as this is not invariably so, I wish to write that now, to-day, claiming to live in the full light that has flooded physic under the new régime, and after the experience of so many years, I see nothing which would make me abate one jot of confidence which I placed in the correctness of the treatment then.”

The above extract conveys, we think, not an unfair idea of the author's style, as well as of his practice. The reader will, therefore, not be surprised to hear that free bleeding is recommended in all the acute inflammations, and that this is notably true in the case of pneumonia. Although he seems to be aware that success has attended the practice of Bennett and others, who have treated the disease by restoratives and the milder antiphlogistic remedies, he sees no reason why we should abandon the use of the lancet and of mercury, which he therefore uses in all forms of pneumonia, excepting in that form which depends upon malarial poisoning and in which he recommends anteperiodic doses of quinia. The notes of six cases of the disease are given, in one of which death occurred, but whether this fairly represents the results of his practice we are left in doubt.

A physician, whose opportunities for observing disease have been so extensive as Dr. Claiborne's appear to have been, must of necessity, in the course of his practice, meet with cases of interest, and reports of such cases will be found scattered throughout the volume, but they are so loosely strung together, and in many instances so meagre in details, that we fear the book will have very little value for the student; especially since the author's pathology as well as his therapeutics is a little antiquated. Among the minor defects of the book may be mentioned numerous errors in the spelling of proper names and occasional mistakes in the writing of prescriptions, which a little care in the reading of the proofs would have prevented.

It is pleasant to be able to say, in concluding this notice, that the manner in which the book has been issued from the press, reflects the greatest credit upon the printer and publisher.

J. H. H.

ART. XXXII.—*Chemistry: General, Medical, and Pharmaceutical, including the Chemistry of the United States Pharmacopœia.* By JOHN ATTFIELD, Ph. D., F.C.S. Fifth edition, revised from the fourth (English) edition by the Author. 8vo. pp. 606. Philadelphia: Henry C. Lea, 1873.

THE former edition of this work having met with the approval of those for whom it was especially intended, the author has been induced to undertake a full revision and introduce all the new matter rendered necessary by the last

revision of the United States Pharmacopœia. The increase in the size of the volume of over fifty pages is made up by new matter and extensive additions to the index. The chapters on the general principles of Chemical Philosophy have been remodelled, and in every part there are evidences of addition and alteration which, though in themselves slight, add to the already comprehensive character of the work. Of these the most extensive are the new processes for the estimation of the alkaloids in the cinchona barks. We would again commend it to the students of medicine and of pharmacy as a useful guide in their practical studies.

R. B.

ART. XXXIII.—*The Diseases of the Prostate, their Pathology and Treatment; comprising the Jacksonian Prize Essay for the year 1860.* By Sir HENRY THOMPSON, F.R.C.S., etc. Fourth edition. 8vo. pp. xxiv., 355. Philadelphia: Henry C. Lea, 1873.

It is but a little more than five years since we were called upon to note the appearance of the *third* edition of this excellent work, and, as might be supposed, comparatively few additions have been found necessary in the present issue. Indeed the book, though in larger type, contains nine pages less than in its previous shape, and while a few paragraphs have been introduced, many more have been omitted. The changes now made are such as are justified by the author's wider experience in the treatment of prostatic affections, and consist chiefly in the substitution of modes of practice which he has himself found useful, for such as were previously recommended on the authority of others.

Of these changes the more important are the following: Local treatment is no longer recommended in cases of chronic prostatitis; an early incision is advised in case of a prostatic abscess pointing in the rectum or in the perineum; and the *sonde coudée*, or "elbowed catheter" (flexible), is mentioned as a valuable instrument in cases of prostatic enlargement. The author speaks less favourably than before of the use of the decoction of senega and of benzoic acid in the treatment of chronic cystitis; and the hot bath is reduced to a place of secondary importance in the management of urinary retention from enlarged prostate, while the catheter is declared to be "in almost all cases . . . the first and only remedy to be employed." For cases in which catheterization cannot be accomplished, the operation of perforating the prostate (which, in 1868, was given the first place, and for performing which the author recommended an instrument of his own devising) is now characterized as a "rough proceeding," which "must be considered as a matter of history." Brander's operation (puncturing the bladder through the symphysis pubis), which was formerly well spoken of, is now condemned; as is Mercier's procedure of incising the so-called "bar at the neck of the bladder." The directions for treating cases of vesical calculus, when complicated with enlarged prostate, are modified in accordance with the author's latest views, as promulgated in his *Clinical Lectures* and in his *Practical Lithotomy and Lithotripsy*.

Altogether the new edition of Sir Henry Thompson's work will fully maintain its reputation, and it is still, as it has been repeatedly called in these pages, "by far the best . . . in any language on the important subjects of which it treats."

J. A., JR.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physical Nature of the Coagulation of the Blood.*—Dr. ALFRED HUTCHINSON SMEE, after briefly reviewing (*Journ. Anat. and Phys.*, June, 1873) the various theories which have been held at different times in regard to the vexed question as to the cause of the coagulation of blood fibrine, gives the views which have been enforced upon his mind by direct experiment, and also by the behaviour of colloidal substances analogous to fibrine.

He summarizes his conclusions as follows: 1st. That the coagulation of fibrine is a physical act, and cannot be considered to be in any way identified with a vital property such as the contraction of muscular fibre. 2d. The coagulation of fibrine depends upon and is regulated by the same laws which cause all soluble colloid substances, whether organic or inorganic, to become pectorous. 3d. That the soluble or fluid form of fibrine ought to be regarded as its allotropic form; and, as in the case of its colloidal analogue, silicic acid, its presence in the blood in the fluid condition depends upon the physical conditions under which fibrine is found in the living body.

2. *Source of Nerve Force.*—Mr. A. H. GARROD presents (*Journ. Anat. and Phys.*, June, 1873) a theory of the mechanism of nerve force, which he thus summarizes:—

The afferent nerves are the conductors to the nerve centres of the electric current which is generated by the contact of their peripheral ends with the tissues of the cooled skin, which they supply. The brain is the largest of the centres towards which the nerve current is directed, the other ganglia forming the smaller. Through these centres the currents, as through an elaborate commutator, are split up or concentrated in a manner not understood as yet, to be directed along the efferent nerves, which are always so situated as to be beyond the reach of external cooling influences. Where an organ acts in any way automatically, it generally has centres of its own, of a size varying in degree according to its automaticity, and these minor centres are only to a certain extent subject to the influence of the brain.

As in the working of the electric telegraph, no return or second special conductor is required to carry back the current to the point from which it started; for where an efferent nerve terminates in a muscle, it loses its insulating covering, and so is put into indirect communication with the peripheral sentient nerves through the intervention of the mass of body tissue generally, which, though its resistance is much greater, offers an incomparably larger mass to be traversed by the current.

3. *Physiology of the Secretion of Bile.*—A very extensive series of investigations upon the physiology of the secretion of bile has recently been conducted by Dr. RÖHRIG, of Kreuznach, in the Pathological Institute at Vienna. Our knowledge of this subject has been hitherto very limited, and probably inaccurate, and had reference rather to the functions of bile, and especially to its digestive properties, than to its secretion and the influence of the blood and nervous system upon it. Whatever may be the use of the bile in the alimentary tract, practical therapists are generally agreed that the liver can be "unloaded," and the amount of bile secreted artificially increased, and that there are certain drugs which so far possess this power as to deserve the name of cholagogues. Röhrig's investigations were made solely upon the discharge of bile—in respect of the amount of the secretion in narcotized animals; the effect upon it of alterations in the vascular supply within the liver; irritation of the different parts of the alimentary tract; the presence of fluid in the intestines; the administration of certain drugs, especially purgatives; as well as the influence of various conditions of the nervous system. The results obtained by Röhrig, after experiments upon hundreds of animals, are detailed in Stricker's *Jahrbuch*, 1873, part ii. We will here notice the most important of them.

The mode of experimenting was simple:—A dog or rabbit was narcotized with curare, and an incision made in the abdominal wall, from the ensiform cartilage to near the umbilicus; the under surface of the liver was then brought to the opening by the hand, and a glass tube with a pointed vertical arm tied into the bile-duct, while the cystic duct was mechanically closed. The bile, as secreted, escaped drop by drop from the capillary end of the tube, and the rate of secretion was estimated by the number of drops per minute. It was first determined that after the operation, and under circumstances otherwise normal, the flow of bile steadily diminishes.

There could be little doubt, *à priori*, that the secretion would be affected in amount by alteration of the blood-supply to the liver, and such was found to be the case. Compression of the trunk of the vena portæ markedly diminished the secretion, but did not completely suppress it; obstruction of the hepatic artery alone diminished the rate of flow slightly; while complete arrest of the hepatic circulation by ligature of both these vessels was followed by entire cessation of the biliary secretion and speedy death. Diminution of the rate of flow was likewise the result of ligature of the ascending cava near the heart, and of ligature of the aorta above the diaphragm; while ligature of the latter vessel below the cœliac axis caused a slight increase in the amount of bile discharged. These last two results are very significant when studied together. Since ligature of the ascending cava in the thorax, and of the aorta below the origin of the hepatic artery have an exactly opposite effect upon the amount of bile secreted, and an exactly similar effect upon the hepatic capillaries—namely, a rise of the pressure within them, it follows that the amount of bile does not depend alone on the height of the blood-pressure in the liver. The influence of the amount of blood upon the secretion is further seen after section of the splanchnics and after section of the cervical portion of the spinal cord; both operations being followed by increased flow of bile. On the contrary, irritation of the cervical cord (reflexly through a sensory nerve) diminishes the flow. No noteworthy effect was observed by Röhrig of irritation or section of the vagi sympathetici. Anæmia induced by phlebotomy and injection of warm water into the circulation reduced the secretion in amount until it finally ceased.

More interesting to the practical physician are the results observed by Röhrig of the introduction of different substances into the alimentary canal. Chyme injected into the gut markedly increased the amount of discharge—a result exactly in agreement with those of former experiments on the condition of the liver during digestion. Similar injections of tepid water and bile caused a temporary increase of the discharge. The most striking results were obtained after the administration of several of the so-called purgatives, and are worthy of our careful attention, even should the action of the various drugs be different in man. The substances employed were croton oil, colocynth, jalap, aloes, rhubarb, senna, sulphate of magnesia, calomel, and castor oil; and the chola-

gogue power of these was found to diminish very much in the order in which they have been enumerated. Croton oil decidedly induced the most abundant flow of bile; castor oil had the least action of all. In all the cases the increased biliary flow was preceded by hyperæmia of the intestine, and followed—never preceded—by diarrhœa. Röhrig concludes that “these substances undoubtedly excite the production of bile.” Less is said of the effects of mercury upon the secretion than might have been desired. It was found that large doses of calomel (twenty grains for a dog) are seldom able to excite flow of bile, if it is quite stopped previously; but if the secretion is simply diminished, it may be increased by the administration of the drug. The greatest action was observed about three hours after administration; it then speedily ceases. There is almost no doubt that the effect of purgatives upon the liver is not to be referred to their immediate action upon the intestine, but to their absorption into the circulation. This is almost proved by two experiments of Röhrig. On the one hand, he found that irritation of any portion of the alimentary canal from the mouth to the anus (including the duodenum), or of the peritoneum, either by mechanical, electrical, or chemical stimuli, had apparently no certain effect upon the secretion of bile. Even when the electrodes were sunk deeply into the substance of the liver, no effect of galvanism was observed. On the other hand, the injection of infusions of senna and rhubarb into the veins immediately and greatly increased the amount of bile secreted.

A more difficult investigation was that of the effect upon the secretion of bile of interference with respiration, and the results obtained were somewhat variable. In many instances there was at first a decided diminution of the quantity of bile, and this was found to correspond with a fall of the general blood-pressure, and was believed to be probably due to it. These phenomena were soon replaced by an increase of the quantity of bile secreted and diminution of the blood-pressure, to which it is probably to be referred. And, finally, there supervened a decline of the discharge and a venous condition of the blood in the body, which also probably stand to each other in the relation of effect and cause.

Röhrig investigated the action of four other drugs upon the liver, as far as it is a bile-secreting gland—namely, strychnia, acetate of lead, carbonate of soda, and opium. Strychnia was found to diminish the secretion; a result which was to be expected in view of the last-mentioned experiment, for strychnia is known to raise the blood-pressure. Acetate of lead was tried, on account of its recognized action on the bloodvessels; when injected either into the intestine or into the veins it diminished the secretion. A similar result was observed after the administration of a solution of carbonate of soda in the same way. Opium increases the secretion of bile; it would appear, therefore, that opium constipates not by arresting the alimentary secretions, but by its action upon the muscular coat of the intestines. Finally, the experimenter confirms Schmulewitsch's observation, that defibrinated blood injected into the portal vein immediately after the complete separation of the liver from the body, causes the secretion of some drops of bile, while a similar injection of salt solution has no effect. The conclusions at which Röhrig arrived are thus briefly stated by himself:—“From all the experiments which I have described, it appears to result that the quantity of fluid which escapes from the biliary vessels of curarized dogs and rabbits is dependent on (1) the vascularity of the abdominal viscera, and (2) the quality of the blood.”—*Med. Times and Gaz.*, July 19, 1873.

4. *The Physiology of Menstruation.*—It is probably the general belief among physiologists and the profession in general that during menstruation one or more ova reach the uterus, and there either become attached to the surface of the mucous membrane or disappear, according as fecundation has occurred or not. If an embryo is developed from the ovum it will correspond with the menstruation immediately preceding—or, in other words, pregnancy will date from the menstruation which last occurred. Dr. KUNDRAT, of Vienna (Rokitansky's senior Assistant), has just published an account of certain researches of his upon the anatomical condition of the uterine mucous membrane before,

during, and after menstruation, which throws very grave doubts upon the correctness of this belief (*Medizinische Jahrbücher*, 1873, vol. ii., p. 135). Kundrat's investigations are all the more worthy of attention that they were of a purely anatomical nature. He examined the mucous membrane of the human uterus in the intervals of menstruation, immediately before the hemorrhage, during the hemorrhage, and again after it had ceased, and the results which he obtained are certainly in favour of the considerable modifications which he would introduce into the physiology of ovulation and menstruation as presently received. The mucous membrane of the human uterus in the "state of rest" has certain peculiarities, as pointed out by the author. There is no submucous tissue, and the mucosa comes into immediate union with the muscular layer. Its matrix is peculiarly rich in round or spindle-shaped cells. The glands, which it is known to possess in great numbers, are lined, like the free mucous surface, with ciliated epithelium. This condition is markedly altered at the monthly period of uterine activity. The mucous membrane is swollen, thick, loose, and almost diffuent, covered with a whitish or bloody mucus, finely injected at spots, and in many cases uniformly coloured of a deep red. A microscopic examination reveals increased abundance of the cellular matrix, especially at the surface, with great elongation and dilatation of the glands. So far there is nothing specially original in the description given by Kundrat, but new and important facts remain to be enumerated. He discovered, in the first place, that the condition of uterus just described probably precedes the occurrence of the discharge of the ovum and—what is perhaps more striking—the menstrual flow by "several days." The author considers that this observation goes far to prove that the uterus is prepared for the reception of the ovum a certain time before the rupture of the Graafian vesicle. Again, while the rough characters remain as described during the menstrual flow, with the addition of the oozing from the surface, and for a short time after it has ceased, careful examination reveals a very remarkable change in the microscopic appearances. The cells of the stroma and the vessels, as well as of the epithelium of the glands and surface, are dull in appearance and filled with fat granules. The question occurs, What is the relation of the hemorrhage to this fatty degeneration of the cells and vessels? Kundrat replies by stating his belief that the hemorrhage does not cause the fatty change, but is caused by it. He refers to the fatty change which is known to occur at the end of pregnancy, and would consider the two phenomena homologous. He also points out the improbability of the cause of the flow being found in congestion, as this occurs frequently without hemorrhage. One fact he has ascertained, is, that the fatty change is most abundant at the surface of the mucosa, where the bleeding takes place. The anatomical sequence of events, therefore, according to Kundrat, at the monthly period of uterine activity is—swelling of the mucosa, fatty change in the cells and vessels, vascular rupture, and hemorrhage. With the blood much altered epithelium is thrown off, but not the whole mucosa, as some believe. It is a short time after the cessation of the menses before the mucous membrane has returned to its "condition of rest."

In inquiring now into the physiological relations of the three processes—the swelling of the mucosa, the discharge of the ovum, and the flow of menstrual blood—Kundrat insists strongly upon the ascertained chronology of the events. The first mentioned of the three is the first in order of time, and it is almost certainly the preparation for the reception of the ovum. It is much more improbable that the uterus during the menstrual flow is in a condition suitable for this function—with a retrogressive process going on in the mucosa, its vessels ruptured, and its surface discharging blood. It is even more improbable that the mucosa in this state of degeneration will on the descent of an ovum take on a totally opposite process, and become highly developed. The type of the impregnated uterus is seen in the active uterus when the mucosa is swollen and menstruation has not yet commenced. If the bleeding does commence, it is a sign that the ovum has perished, and that the mucosa is returning to its state of rest. Thus we arrive at the highly important conclusion that a developing ovum, or growing embryo, belongs not to a menstrual period just past, but to one just prevented by fecundation. Löwenhorst has already expressed

this opinion from a consideration of the clinical aspects of menstruation, and we believe that the method of calculating the duration of pregnancy suggested by the new facts is not altogether a new one among the gynæcologists and practitioners of this country.—*Med. Times and Gaz.*, July 26, 1873.

5. *New Sign of Death*.—Dr. LIERSCH states it is well known that when the cornea of a living eye is punctured to evacuate the aqueous humour the pupil always contracts; this he asserts does not occur when the puncture is made in the eye of a dead person. He points this out as a simple and certain means of diagnosis of apparent from real death.—*Revue des Sciences Médicales*, July, 1873, from *Vierteljahrs f. gericht Med.*, April, 1873.

6. *Influence of Changes in the Barometric Pressure on the Phenomena of Life*.—Some time ago M. BERT showed that the evil results which immediately follow the too rapid passage of men (*e. g.*, in divers), ascending rapidly after submersion at a considerable depth, or of animals from compressed air at a pressure of several atmospheres to the normal pressure, are due to the formation of bubbles of gas in the blood. These are due to the nitrogen which was dissolved in the blood during the continuance of the pressure returning to the gaseous condition when the pressure is removed. The bubbles of gas arrest the circulation in various parts of the body, and especially in the lumbar portion of the spinal cord, where they give rise to paraplegia or softening. When they occur in large quantity they obstruct the pulmonary circulation, distend the heart, and cause death more or less rapidly. The danger arising to different animals from sudden removal of pressure varies with the species, and even with the individual. It seems to increase with the size; and, whereas a rapid change from 11 atmospheres to one is requisite to produce death in sparrows, a change from 9 atmospheres will cause it in cats and rabbits, from 7 or 8 in dogs, and in man from 5 atmospheres. Paraplegia generally occurs in dogs after a change from 7, and death from $7\frac{1}{2}$ atmospheres. In seeking an explanation of these differences, M. Bert found that the arterial blood of a dog breathing air at the normal pressure is almost saturated with nitrogen at that pressure. Blood collected over mercury from a dog exposed to an increasing pressure begins to disengage bubbles of nitrogen when the pressure of the air which it respire has attained 3 atmospheres, but no bad effects appear till the pressure has been carried to 7 atmospheres. There is, therefore, a time after the animals have been exposed to pressures varying from 3 to 7 atmospheres, when the blood contains small bubbles of gas, although the animals do not seem to suffer. The reason of this is, that the bubbles are so extremely small that they pass through the capillaries without causing any obstruction, and gradually disappear. During this time, however, the animal is in great danger; and, if the bubbles should happen to aggregate and obstruct some of the vessels, accidents will occur. Thus it happens that some divers are paralyzed, or even killed, by diminutions of pressure which do not affect others.

While he was seeking to investigate this problem still further, M. Bert's apparatus unfortunately exploded, and he was thus deprived, for the present, of the means of prosecuting his researches. At the time when the explosion took place, a dog was contained in the apparatus, and subjected to a pressure of $9\frac{1}{2}$ atmospheres. The dog seemed well during the continuance of the pressure, but, when the apparatus burst, it died instantaneously. Not only were all the bloodvessels filled with gas, but the abdominal walls were distended with it, and there was general emphysema of the subcutaneous and intercellular connective tissue. This shows that the gas may become stored up in the other fluids of the body, as well as the blood; and the reason why the author has not noticed this before is, that in all his other experiments the pressure has been diminished too gradually. He considers that the horrible itching, to which divers give the name of fleas, and the muscular swellings which they call *mouton*, are due to a slight gaseous infiltration of the cellular tissue. The unfortunate destruction of his apparatus prevents M. Bert at present from pursuing his studies regarding the best means of preventing the occurrence of accidents

from the diminution of atmospheric pressure. He has already, however, discovered some very important practical rules. In order to prevent accidents, the pressure must be diminished very circumspectly. If it have reached 9 or 10 atmospheres, at least 12 minutes per atmosphere must be allowed for the removal of the pressure, in order to avoid all danger. It seems better to diminish the pressure rather quickly, by 1 or 2 atmospheres at a time, and then to leave it constant for some time, than to diminish it more slowly and constantly.

When accidents have occurred, and paralysis has taken place, and death is imminent, the author thinks the best thing to do is to increase the pressure at once, so that the gas which has become free in the blood may at once be re-dissolved. His apparatus has not permitted him to increase the pressure with sufficient rapidity to obtain successful results with animals; but in the case of divers it can be done with the greatest ease by making them descend again to a sufficient depth. Although M. Bert has not succeeded in removing the bubbles of nitrogen gas from the blood of animals in this manner, he has managed to do it by making them inhale oxygen. The nitrogen then diffuses rapidly from the blood as it circulates in the pulmonary vessels into the oxygen with which the lungs are filled. When a dog, in whose heart a gurgling sound was heard, and whose jugular vein was distended with gas, was made to inhale oxygen, the distension of the vein very quickly disappeared, the cardiac sounds became normal, the respiration became regular, and the rapidly impending death was averted. After several hours, however, paralysis occurred, and this was seen on post-mortem examination to be due to minute bubbles of gas in the small vessels of the nerve-centres, which has caused local arrest of the circulation. In this manner they had both destroyed the vitality of the nerve-centres, and at the same time prevented their own removal, for free gas had entirely disappeared from the blood in the general circulation. The inhalation of oxygen, however, prevents immediate death, and it may be employed to preserve life till the atmospheric pressure can again be raised sufficiently to induce the more or less complete reabsorption of the bubbles of gas, and thus re-establish the circulation. When this is once effected, all further danger may be avoided by simply diminishing the pressure again very gradually. M. Bert advises that all divers and workmen who are exposed to danger from sudden diminution in atmospheric pressure should inhale oxygen whenever they feel, after ascending, any uneasiness which may occasion fears of something serious. After inhalation, the atmospheric pressure may be again raised by descending, if it be thought advisable. The author considers that the same treatment might be successfully employed in accidents arising from the introduction of air into veins.—*London Med. Record*, June 18, from *Comptes Rendus*, March 3, 1873.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

7. *Constitution and Action of Croton-Chloral Hydrate*.—Dr. OSCAR LIEBREICH gave an account of the action of this substance, comparing it with chloral hydrate, and pointing out some of the conditions indicating its use. Its action differed from that of chloral hydrate in that, while it produced sleep, it did not affect muscular tone or interfere with circulation or respiration. Its use was indicated where chloral hydrate was inapplicable on account of heart-disease; and in cases of neuralgia affecting the trigeminal nerve. Where large doses of chloral were necessary to procure sleep, Dr. Liebreich recommended the addition of some croton-chloral.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

8. *Local Applications of Chloral*.—Chloral, besides its hypnotic properties,

seems to possess an antiputrid action. Either the hydrate of chloral, or what is called metachloral, may be used. The latter, according to Dumas, is prepared by placing in a bottle with an emery stopper some chloral and five or six times its weight of sulphuric acid. The next day the chloral is transformed into metachloral, which must be well washed with water to remove the sulphuric acid. It is a coarse white powder, smelling strongly of chloral, hardly soluble even in boiling water, and distilling between 150° and 200° C. without melting. Regnault has shown that it is similar in composition to chloral, and its formula is $C_4HCl_3O_2$, being simply an isomeric modification of chloral. Dr. Dujardin-Beaumetz, of Paris, has lately experimented on the local application of chloral as a caustic or modifying agent and a local anæsthetic. It may be applied in substance, which mode is rather difficult, or in solution of different strength—namely, one or two per cent. in water or glycerine. Metachloral is applied in powder upon foul wounds, replacing advantageously iodoform, the smell of which is so disagreeable. Cases are given where the application of chloral has been of much use in gangrene, phagedena, rodent ulcers, lardaceous ulcerations, certain diseases of the skin, lupus, and for modifying the cavities of abscesses, etc. It is of much value in relieving the pain of cancerous ulcerations; and, as chloral possesses the property of preventing decomposition of the urine, Dr. Beaumetz thinks that in certain diseases of the bladder it may be usefully injected into that viscus.—*Lancet*, Aug. 30, 1873.

9. *Therapeutical Value of Phosphorus*.—In an interesting paper on the physiological action and therapeutic effects of phosphorus, M. Gubler states that phosphorus is a diffusible stimulant of great energy and of dangerous activity. It should therefore only be prescribed with the greatest possible caution, and certain contra-indications may in the first instance be laid down. Thus it should not be used in any affection characterized by nervous, circulatory, or trophic excitation, as in tonic and clonic convulsions, contractions, neuroses having a hypersthenic origin, diffuse peri-encephalitis with general paralysis, phlegmasiæ of all forms, fevers of every kind, exanthematous affections, etc. The indications for its use are the existence of disease unaccompanied by inflammation, fever, and nervous excitation, and especially in such cases as are characterized by depression of the circulation, either local or general, diminished power of generating heat, exhaustion or local asthenia, with paralysis of sensation and movement. Hence its value in cachectic states consecutive to long and exhausting diseases, marsh fevers, protracted convalescence, tabes dorsalis, paralyzes of old date, and of cerebral, medullary, or peripheral origin, when there are no signs of irritation; in hemiplegia, paraplegia, amaurosis, and other partial paralyzes. Phosphorus again is sometimes useful in making chronic eruptions advance or recede; but it is especially as a remedy for impotence that it has been praised, though it has often disappointed the expectations of those who have prescribed it, and has either proved of no value at all, or its effects have only been ephemeral. Hence it would appear that the real remedial power of phosphorus is considerably restricted, and that it can only be regarded as of great value in paralytic affections. Dr. Delpech, who has studied so deeply the effects of sulphuret of carbon, praises phosphorus highly as an agent to remove the paralysis and loss of power which accompany intoxication by that substance. It is also of service in the so-called rheumatismal and hysterical paraplegiæ, or in other words those forms of paraplegia which are not caused by organic lesion, as well as in cases of cerebral disease in which all irritation has ceased and cicatrization has taken place. It is still more strongly indicated in cases of asthenic and diffused paralysis, consequent on diphtheria or some other acute affection. Gueneau de Mussy, Isambert, and Féréal have all found it efficacious in the treatment of mercurial tremour; it is also believed to be so in paralysis agitans and in the various forms of medullary sclerosis affecting the antero-lateral cords, and above all in sclerosis of the posterior columns, the symptomatic expression of which is summed up in the term locomotor ataxy, which has been applied to it by Duchenne. Dujardin-Beaumetz is he who has most strongly recommended the plan of treatment by phosphorus in this and similar affections; but it is questionable, M.

Gubler thinks, how far many of the successes attributed to its use are really due to its remedial powers. We forget, he says, the natural processes of cure that often take place. Phosphorus is an active agent that may momentarily re-illumine the fading spark and revivify the languishing powers of life; but as it brings no energy with it, it impoverishes rather than enriches, and can do little for a nervous system exhausted by a chronic affection. The amorphous phosphorus is perhaps the best mode of prescribing it, as this possesses no exciting or irritating action. Externally, it has been chiefly employed in squamous affections of the skin as a parasiticide in itch and as a caustic in the place of the moxa. Recently Taignot has declared that it will render the cataractous lens transparent, but the negative facts obtained by MM. Gosselin and Maisonneuve render this more than doubtful. In regard to the mode of its administration, solutions are usually preferable to pills. Amongst the former are the ethereal tincture, which contains one part in sixty, and of which ten drops are a dose; the solution in chloroform, which is now almost abandoned; and the solution in oil, which is by far the best, and especially that prepared by Méhu. Here the oil is dehydrated and decolorized by exposure to a heat of 250° C., and the phosphorus is added when it was cooled. A twentieth part of ether is then added. The proportion is one part of phosphorus to 500 of oil, and it contains two milligrammes in fifteen drops. Each capsule contains one milligramme.—*The Practitioner*, July, 1873, from *Bulletin Général de Thérapeutique*, May 30th, 1873.

10. *Nitrate of Zinc as a Caustic*.—M. LEFORT describes (*Journ. de Pharm. et de Chimie*, May, 1873) a caustic paste prepared from nitrate of zinc, which has been reported on favourably by Drs. Clément and Desgrange, of the Hôtel-Dieu, Lyons. The nitrate is prepared by dissolving commercial zinc with heat in equal volumes of nitric acid and water, maintaining an excess of zinc, and concentrating until a slight basic precipitate is formed, which carries down any iron present. Boiling water is then added, and, when cool, the solution is filtered, and evaporated at a gentle heat until slight ebullition takes place; if then left to cool, it forms a cake, which should be broken up and drained in a glass funnel. Of the nitrate of zinc so prepared, 100 grammes are dissolved in 50 grammes of water, and afterwards incorporated with 50 grammes of wheaten flour. This forms an homogeneous paste, which remains soft, spreads easily over surfaces without afterwards contracting, and does not spread at the edges through absorption of moisture. When made into cylinders, it should not be dried by heat, as it slightly decomposes and becomes yellow and friable; it may be kept dry by placing it in a tin box with some pieces of quicklime, but not in contact with them.—*London Medical Record*, June 18, 1873.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

11. *Pathogeny of Spontaneous Cerebral Hemorrhages*.—A writer in the *Mouvement Médicale* (Jan. 11, 1873) remarks that until now the causes to which spontaneous cerebral hemorrhages have been assigned are sclerosis of the small cerebral arteries and fragility of the vascular walls due to atheroma or fatty degeneration, etc. MM. Charcot and Ch. Bouchard, relying on a great number of careful observations, have rejected arterial sclerosis as the cause, and have pointed to the presence of miliary aneurisms as leading to spontaneous hemorrhages. For several years past Zenker has applied himself to the verification of this fact, and in every case that he has himself examined with sufficient care, has determined the presence of miliary aneurisms, not only in the neighbourhood of the hemorrhage clot, but in other parts of the brain. They are true aneurisms, that is to say, they are formed by a vascular dilatation

bounded by all the arterial coats. These minute aneurisms were described long ago by Virchow, but it is unquestionable that MM. Charcot and Bouchard were the first to discover their frequent presence and their pathogenetic influence in spontaneous cerebral hemorrhage. They may be seen with the naked eye, being sometimes scarcely visible, and sometimes about the size of a pin's head. Occasionally they are isolated, but may also be found scattered through the whole extent of the brain. The usual course of cerebral hemorrhages is as follows: The inner coats of the arterioles first become ruptured, and thus give rise to the formation of a dissecting aneurism. This state of things may continue for some time; or, in consequence of a process of regression, nothing remains but a little pigmentary tubercle. Lastly, in other cases the adventitious tunic at length becomes ruptured, and gives rise to a cerebral hemorrhage.

So far Zenker agrees with MM. Charcot and Bouchard, but he differs from them on the following points. While the French authors consider arterial sclerosis as altogether independent of the formation of these minute aneurisms, Zenker, on the contrary, is persuaded that they are due to sclerosis of the inner coat of the cerebral arterioles—a fact which was long since pointed out in regard to aneurisms of the larger arteries. Even if miliary aneurisms may exist without any alteration of the arteries at the base of the brain, microscopical investigations have nevertheless shown that in the neighbourhood of these miliary aneurisms the inner coats of the arterial branches have undergone peculiar changes, consisting of irregular thickening and sclerosis, and sometimes of fatty degeneration.—*Lond. Med. Record*, April 30, 1873.

12. *Case of Local Softening of the Brain from Thrombosis of Syphilitic Arteries.*—By Dr. J. HUGHLINGS JACKSON. A gentleman aged thirty-eight, in apparently good health, was first seen in July, 1867, for recent (July 14th) paralysis of the parts supplied by the left portio dura nerve, and for recent partial deafness of the left ear. There were also remains of paralysis of the right leg, which had begun in April. He rapidly got rid of all his nervous symptoms after taking iodide of potassium; but he did not continue the drug because he believed all his ailments to be owing to ague-poison. He had been in the West Indies, and still remained subject to slight shivering attacks. He had had primary syphilis fifteen years before. He remained well until March 2, 1868, when he became hemiplegic of the left side. He would not take any drugs except aperients. Nevertheless, in about a week he was apparently well again; but on March 21st he was found apoplectic and again hemiplegic—this time of the right side. He died next day. At the necropsy there were found diffused softening of part of the right corpus striatum, and also softening of the left corpus striatum. There was syphilitic disease of each middle cerebral artery. Thrombosis of each at the part diseased accounted for the two local softenings, and for the two attacks of hemiplegia related to them. The random succession of symptoms in this case was very characteristic of syphilis. Dr. Hughlings Jackson said that the case showed one of the several very indirect ways in which syphilis caused nervous symptoms. The hemiplegia in such a case was dependent directly on softening of the corpus striatum, produced by thrombosis of a syphilitic artery. The "syphilitic hemiplegia" here illustrated was but one of three kinds producible by syphilis. Again, the case showed that recovery would occur from hemiplegia, notwithstanding that the damage which caused that hemiplegia was not altogether repaired. Iodide of potassium was not likely to be useful in such a case of hemiplegia, though syphilitic; while it was useful in cases of recent palsies of cranial nerves. In treating the latter we were treating recent syphilitic disease; whilst in treating the kind of syphilitic hemiplegia under remark, we were treating local cerebral softening.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

13. *Uncommon form of Uric Acid Crystals observed in the Expectorations and in Saccharine Urine.*—Dr. J. W. MOORE states (*Irish Hospital Gazette*, July 15, 1873) that he examined the sputum of a gentleman who had for some time been troubled with certain gouty symptoms. In addition to epithelium,

pus and mucus corpuscles, the sputum, which gave a *neutral* reaction with test-paper, contained a number of very delicate, spear-headed, apparently octahedral crystals, the exact nature of which I found considerable difficulty in ascertaining. The finer crystals resembled those of stearine or stearic acid, as figured by H. Lebert (after Funke) in his work entitled *Traité d'Anatomie Pathologique Générale et Spéciale* (Atlas, vol. i., plate cxcix., fig. 7). Others might readily be mistaken for diatoms, from their peculiar central marking and general size and shape; while a few of the largest bore a strong resemblance to spear-headed crystals of uric acid, as depicted by Dr. Lionel Beale (*Kidney Diseases, Urinary Deposits and Calculous Disorders*, third edition, plate xxvii., fig. 151, p. 384.)

On December 17th I had a second opportunity of observing these crystals in the expectoration of the same gentleman, and on this occasion I subjected them to a more searching chemical examination. By teasing out the sputa, I succeeded in setting free several of the crystals into some pure water. A drop of liquor potassæ was then added, and instantly the crystals disappeared. They also proved to be slowly soluble in strong acetic acid, but ether had no effect upon them. The conclusion drawn from this examination was that the crystals were composed of uric acid.

He further states that he had occasion to examine a specimen of diabetic urine, pale, and having a specific gravity of 1036, the quantity of sugar present being considerable. When the urine was allowed to stand, a visible deposit of uric acid rapidly took place. On microscopical examination, a normal quantity of mucus and epithelium was observed, in addition to which there were present numerous specimens of torula, and great numbers of uric acid crystals of various forms and sizes. Among others there were many examples of the delicate spear-headed or diatomic crystals I had noticed in the gouty expectoration last December. They all answered to the ordinary tests for uric acid, and of their precise nature no doubt could possibly be entertained.

The presence of free uric acid in the respiratory tract of gouty persons is a condition possessing much interest on etiological grounds. It can hardly be doubted that here we discover one cause, at least, of the tendency to, and occurrence of, bronchial affections in so many cases of gout. Irritation of the bronchial mucous membrane by delicate acicular and spear-headed, or (as they might be termed) diatomic crystals of uric acid, would surely be sufficient to induce a low or chronic form of bronchitis, which would become more and more aggravated as the gouty poison began in time to affect and weaken the heart.

14. *Symptomatic Alteration of Muscles.*—Dr. GEO. HAYEM, of Paris, uses this expression to denote the changes which take place in muscle under the influence of most diseases. He had found them not only in acute specific diseases, but also in diseases of slow progress, leading gradually to marasmus and cachexia. The mode of evolution and the histological characters of the changes were found to differ according to the disease which they attended. The general result of numerous researches made by M. Hayem was to show that the muscular system indicates, in distinct anatomical characters, the general disturbance of nutrition which attends all diseases. It might be said, in general terms, that when nutrition suffers, the muscular tissue has a tendency to disappear, at least partly, more or less rapidly, in various ways. Along with this process of destruction, there is also, both in chronic cachectic states and in acute diseases, a constant effort at repair, attended with varying results. The new muscular fibres in all these cases are formed by proliferation, either of the pre-existing muscular cells, or of the cells of the connective tissue (the internal and external perimysium). M. Hayem had found changes in the heart analogous to those met with in the muscles of the body, both of destruction and of reproduction of muscular fibres. The paper was illustrated by specimens.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

15. *Abscess of the Liver opening into the Ascending Cava.*—Dr. LEON COLIN, Professor at Val de Grace, records (*L'Union Médicale*, Aug. 5, 1873) a very remarkable, if not unique, case of this, observed by him in his service at

Val de Grace. At the autopsy it was found that an abscess of the liver had burst into the ascending cava, and that there were secondary purulent collections in the pulmonary parenchyma. During life, these purulent collections opened into a bronchus and the pus was expectorated, which led to the error of supposing that the abscess of the liver had penetrated through the diaphragm into the bronchi.

16. *Epidemic of Typhoid Fever from Infected Milk.*—A very serious and extensive epidemic of enteric fever has recently prevailed in one of the wealthiest and (from a sanitary point of view) one of the best cared-for parishes in the west end of London. There have been about 500 cases distributed in 104 families, 96 of which are known to have used milk from the same dairy, the circumstances connected with the outbreak in the remaining 8 families have not yet been investigated. The mass of evidence points in a most striking manner to the milk of the particular dairy above referred to as at all events the carrier of the germs of infection.

The present Marylebone epidemic is apparently the eighth known instance in which typhoid (not to mention scarlet) fever has been scattered through families by means of their milk-supply. The first instance occurred at Penrith, and was ably investigated by Dr. W. M. Taylor; then followed the Islington epidemic, reported upon by Dr. Ballard, and in addition to these, epidemics in which milk was apparently the disseminator of the poison have occurred twice at Leeds, and once at Parkhead, Chester, Edinburgh, and lastly in Marylebone.

From the *Lancet* of August 16th, we learn that many facts have been noted which seem to point conclusively to the milk as the source of infection, and there is no stronger piece of evidence than that which occurred in the family of Dr. Murchison, which was the means in the first instance of giving a clue to the origin of the disease. The facts were briefly as follows: On July 22d the three eldest of Dr. Murchison's seven children sickened with typhoid within a period of twenty-four hours. On looking about for the cause he was convinced that it was not due to defective drainage or polluted water, and was inclined to think that it could not be the milk, for in that case it would have been reasonable to suppose that the four younger children, who have to a great extent a milk diet, would have been the first to suffer. On July 31st two of the younger children sickened. Dr. Murchison's house has been supplied with a double milk-supply; one quantity of milk for the household at large, and another quantity, which was always brought in a special sealed can, for the use of the baby and the occupants of the nursery. Up to July 31st those only suffered who had derived their milk from the ordinary household supply, while those who partook of the nursery supply escaped. On July 25th the nursery supply was discontinued in consequence of the departure of the baby for the country, and the three remaining younger children were thrown upon the household supply, and within six days of that date two of them were down with typhoid. It is worth adding, that certain members of his household who drank much water suffered in no way.

The fact, which at first did not seem to point to the milk, now admitted of a very different interpretation, and in the face of former experience it became at least probable that the milk was at fault. Several surgeons living close to Dr. Murchison have had typhoid in their households. In one case two children and two servants sickened; in the other case the family were away, but two of the servants had typhoid, and one of them has, we regret to say, since died from perforation of the bowel. At this latter house the person who brought round the milk remarked that, "wherever she went with the milk there seemed to be somebody ill." We have already received information of sixty-one families residing in the parishes of Marylebone, Paddington, and St. George's, which are infected with typhoid, and in all but two of these families, the source of the milk-supply is the same. Of the two cases which seemed at first to counter-balance to a slight extent the case against the suspected dairy, one has since been found to lend the strongest confirmatory evidence. In this case only one child sickened in a household not getting its milk from the suspected source, but the child itself had been to stay a few days with the family of a friend

getting its milk from the suspected source, and of this milk she drank largely; and in the same week the child who remained with its parents in London, and five members of the friend's household who had left London and returned to Derbyshire, sickened with typhoid simultaneously.

It is of course not for one moment to be supposed that every case of typhoid at present in London can be traced to milk-supply as a cause, but when the only connecting bond between sixty families in which typhoid is raging to a greater or less extent is the shop where they buy their milk, the suspicions against such shop are certainly justifiable, and we feel it our duty to give them publicity. Some of the cases are very extraordinary. A lady of title and a physician living next door to each other in Grosvenor Street obtain their milk from the same source, and a physician who lives opposite has seen the milk for these two houses *taken out of the same can*. Two of the servants of the lady of title have sickened with typhoid, and one of them has, we hear, since died in St. George's Hospital. In the physician's household there has been no typhoid, and apparently for the reason that it is a stringent rule of the house that the milk is all boiled as soon as received.

In the instance of the household of a well-known nobleman, the domestics have been supplied with milk from the suspected source, but the family itself from another source. Of the servants, five are down with typhoid, but none of the family have suffered. The ten members of the household who did not take the suspected milk drank the same water as the domestics.

The family of a lady of title in Brook Street consists of three children. The eldest drinks tea for breakfast, and has orange wine and water at night. The two younger children drink milk both at night and morning. The two younger suffered, while the eldest escaped.

In a family which does not get its milk from the suspected source there are two servants ill, and it turns out that a short time since, returning home hot and weary from a walk, these two servants sent out and purchased some milk from the suspected source. There are no other cases of fever in this family.

A young lady aged eighteen sickened at Norwood with typhoid in the last week of July. There were no other cases in the house (which contained many children), and no typhoid fever in the neighbourhood. It seems that she had been staying during the early part of July with some friends near Portman Square, that she had contracted measles there, and during her convalescence had drunk a very great deal of milk, which had come from the suspected source. Within three days of her return to Norwood she sickened with typhoid.

In a house in which four servants are living on board wages two of the servants get milk from the suspected source, and two do not. The two former have typhoid fever.

In the Middlesex Hospital there are at present nine patients with typhoid fever. Of these, two came from distant parts of London, and of the remaining seven, six have been getting milk from the suspected source.

In the London Fever Hospital on August 6th, there were three cases of typhoid fever, and of these two got their milk from the suspected source.

In University College Hospital there have been three cases (one of which had died) of typhoid, all of whom got their milk from the suspected source.

The investigation which has already been made by Mr. J. Netten Radcliffe and Dr. Whitmore serves to confirm that which, to all reasonable men, was a certainty. At one of the farms belonging to the dairy, situated at Chiltern Grove, near Thame, it has been discovered that one of the men employed died on June 8th, with all the symptoms of typhoid, and the son of this man is at present ill with the same disease. The sanitary condition of this man's house and the farm is exceedingly bad, and there can be no doubt that some of the water used on the farm has become contaminated with typhoid poison.

17. *Treatment of Glandular Affections.*—Dr. F. PAGE ATKINSON gives (*Edinburgh Med. Journ.*, August, 1873) the following outlines of the treatment he has pursued for some years in glandular affections, and with satisfactory results.

In Quinsy he says: "I can predict with certainty that any patient will be

quite well and able to resume his duties on the fourth day; whereas, by the old method of treatment, the disease lasted from nine to ten days. I do not know of a single instance in which matter has formed, except prior to the time of the patient coming under my care. The prescriptions I give are the following:—

“20 grains of bicarbonate of potash; 30 minims of the compound tincture of guaiacum; as much as is necessary of the compound tragacanth powder, in one ounce of water, and 15 grains of citric acid, in half an ounce of water. To be taken in a state of effervescence, three or four times daily.

“25 minims of the tincture of iodine, in an ounce of water, to be used as a gargle three or four times daily; three or four glasses of port wine in the course of the twenty-four hours, and as much beef-tea as the patient can take.

“The throat should be left uncovered, and poultices, steam inhalations, etc., should be particularly avoided, as also should the use of purgatives. In these cases there is generally a rheumatic tendency; and it will be found on inquiry that there has been excessive mental or bodily exertion prior to the attack.

“Quinsy is not the result of cold; for, if it were, laryngitis would be a more frequent accompaniment than it now is. As regards the treatment, I would remark that it must be carried out in its entirety, or the results expected will not be obtained. When suppuration has already commenced, order simply the iodine gargle, the port wine and beef-tea, and omit all internal medicines.

“In the case of *Inflammation of the Breast*, give the following: 20 grains of bicarbonate of potash; 10 minims of spirits of nitrous ether; 10 minims of aromatic spirit of ammonia, in one ounce of water; and 15 grains of citric acid in half an ounce of water; and order to be taken, in a state of effervescence, every four hours.

“Apply to the breast an ointment consisting of three parts of the extract of belladonna, and one of iodine ointment. Keep the patient up with good, strong beef-tea, and if there is much fever, with a quick pulse, give port wine. The rationale of the treatment proposed is this: the effervescing citrate of potash, as stated above, acts as a febrifuge; the nitre relaxes the cutaneous vessels, and lessens the quantity of fluid which keeps flowing to the breast; while the belladonna soothes pain, and the iodine helps the absorption of the lymph which has been thrown out. Where abscess has already occurred, give 30 minims of the perchloride of mercury solution, 15 minims of spirits of chloroform, 15 minims of dilute hydrochloric acid, 60 minims of compound tincture of bark, in one ounce of water, three times daily, and paint the breast with a solution of nitrate of silver (2 grains to the ounce of water).

“I have rarely found it necessary to strap the breast, except when the abscess has been very deep, and the opening has taken place on the upper surface of the breast; and even in these cases strapping rarely proves of much service.

“In cases of *Inflammation of the Testis*, I order the effervescing citrate of potash, in combination with drachm doses of hyoscyamus. The testicle itself should be well supported, and kept covered with some lint dipped in a lotion of 15 minims of the tincture of opium and 15 minims of the tincture of belladonna to the ounce of water, and this again enveloped in oiled silk. This method of treatment will be found to lessen pain, and also the tendency to bubo. When the testicle becomes chronically enlarged, cover it with lint smeared over with blue ointment, and strap, and give the perchloride of mercury and bark internally. Where *Bubo* occurs by itself, give the effervescing citrate of potash and hyoscyamus internally; paint the enlarged gland with iodine; keep it covered with spongiopiline dipped in a solution of sulphate of zinc and alum (3 grains of each to the ounce of water), and enjoin rest. In both these cases, stimulants should be avoided, and the patient should only take a light diet. Barley-water may be recommended as a drink. Beef-tea, of course, should be freely given. Where the *parotid* becomes inflamed, give the effervescing citrate of potash and guaiacum, paint the gland with tincture of iodine, and then, when dry, apply a linseed-meal poultice which has been made up with a warm lotion, consisting of 3 grains of alum and 3 grains of sulphate of zinc, in one ounce of decoction of poppies. Port wine should be given according to

the necessity of the case, and plenty of beef-tea. Where there is *inflammation of the absorbents*, I order the effervescing citrate of potash and ammonia, and keep the limb incased in a poultice made up as above. When there is *suppuration*, I find it best to prescribe 3 grains of muriate of cinchona, 15 minims of the tincture of the perchloride of iron, and 15 minims of spirits of chloroform, in one ounce of water, three times daily; port wine or brandy, according to the requirement, and beef-tea, as much as can be taken.

"In the case of *Scrofulous Enlargement of the Glands*, give the syrup of the iodide of iron internally, with small doses of gray powder and powdered pecacuanha, and paint externally with tincture of iodine; and the same treatment may be applied both internally and externally where there is an ulcerated surface. The local application of iodine certainly seems to effect more good than the nitrate of silver.

"Where there is *Enlargement of the Thyroid*, apply a lotion constantly, consisting of 3 grains of alum, 3 grains of sulphate of zinc, 3 grains of sulphate of iron, to the ounce of water, and give internally the following mixture: 3 grains of the bromide of potassium, 60 minims of Parrish's chemical food, 10 minims of tincture of digitalis, water to the ounce—three times daily. Pancreatic emulsion is also of use in giving nourishment to the nervous system. Underdone meat and plenty of farinaceous food should be also recommended."

18. *Action of Cold Water on the Spleen*.—Dr. F. MOSLER has arrived at the following conclusions from experiments on the action of water on the exposed spleens of animals. 1. The immediate contact of water with the normal spleen produces a visible contraction of the organ, varying in degree with the temperature of the water and the duration of the application. 2. In a less degree, cold water exerts the same action on the spleen through the intestinal walls. The effect of a cold douche is greater than that of the application of cold compresses or pieces of ice; probably the mechanical influence plays a part here. The action of water is inferior to that of quinia in causing contraction of the spleen. 3. Cold water also produces diminution in the size of splenic tumours, both acute and chronic. 4. The febrile paroxysm in ague may be arrested by cold douches applied after Fleury's method. 5. The cold douche does not supersede the use of quinia either in recent or in chronic cases of intermittent fever. 6. The therapeutic action of the cold douche in intermittent fever is not complete. It does not prevent relapses nor the formation of splenic tumours. 7. The splenic tumour in typhus is reduced in size by the use of cold water. 8. Much good is to be expected from a combination of the application of cold over the spleen, either in the form of ice or of the cold douche, with the administration of quinia.—*British Med. Journ.*, June 21, from *Virchow's Archiv*, 1873, pt. 1.

19. *Hydrocyanic Acid as a Remedial Agent in Delirium Tremens*.—Dr. HENRY B. DOW expresses his belief (*Brit. Med. Journ.*, May 31, 1873) that hydrocyanic acid fulfils all the indications in delirium tremens better than opium, digitalis, or belladonna. "It allays the irritation of the stomach, and checks the nausea and vomiting; it quiets the nervous excitement, and, by so doing, tends to produce sleep; and it also controls the action of the heart. It has the advantages of producing its effects quickly, and of not being cumulative, and is taken readily by most people. I have used it with the most satisfactory results, and will now mention my usual method of administration. I give it in combination with bicarbonate of potash, chloric ether, and camphor mixture, in doses of one, two, or three minims of the Pharmacopœia solution every two, three, or four hours, according to the severity of the case; and also find that benefit may sometimes be derived from the addition either of three or four grains of carbonate of ammonia, or a few minims of the compound spirit of ammonia. The patient is to be nourished by the administration of beef-tea, milk, etc., and wine or other alcoholic stimulants to be given, according to the discretion of the medical adviser; the less, however, the better. As soon as the worst symptoms have been relieved by the above treatment, the appetite is soon restored by the use of dilute nitric acid and decoction of cinchona."

20. *Nitrate of Potash in Acute Pneumonia*.—Dr. H. MACNAUGHTON JONES extols (*Dublin Journal Medical Science*, July 1873) the value of nitrate of potash in doses of 15 grs. every three hours in acute pneumonia, and relates four cases in support of his views. These cases, he remarks, “show the action of the nitrate of potash in reducing the fever in acute inflammatory attacks of the lungs. I do not propose to discuss the method in which it cures the inflammation and arrests its progress, whether it be by promoting the absorption of its products through its action on the fibrin, or by a direct action on the blood through an effect on its corpuscles, or only a secondary influence by reducing the force of the fever, and lowering the force and frequency of the heart’s pulsations. I am inclined, myself, to believe that it acts in both ways, and that the beneficial results which I have frequently witnessed coming on so speedily after its administration can hardly be altogether due to an indirect effect on the heart’s action and on the general pyrexia. Nitrate of potash, in similar doses, has proved to me an invaluable agent in acute rheumatism, either by itself or combined with bicarbonate; and here, I think, we must look for an explanation other than above stated, and attribute its power to its direct action on the inflammatory blood.” It should be remarked that in these cases Dr. J. gave at the same time large doses of quinia, and covered the chest with flaxseed poultice.

[Nitrate of potash was a favourite remedy of the late Professor Chapman in acute pneumonia and rheumatism, and we have often witnessed its beneficial effects.]

21. *Oxide of Zinc in Infantile Diarrhœa*.—Dr. E. MACKEY, of the Children’s Hospital, Birmingham, extols (*British Medical Journal*, July 12, 1873) the value of oxide of zinc in infantile diarrhœa. It has given him, he says (suitable diet being prescribed) excellent results in all the varieties of that disease, notably in those complicating hooping-cough. The doses may be one grain for any age under two years, and may be given with a little syrup, mucilage, etc., three or four times daily, not on an empty stomach.

22. *Carbolic Acid in Dysentery*.—Dr. AMELUNG, of Carlshafen, states that he has treated two epidemics of dysentery with carbolic acid, losing only two patients out of eighty, one of whom was a very old woman, and the other an infant of six months. If hard fecal masses can be felt through the abdominal walls or found in the stools, he begins the treatment with a castor-oil emulsion; if not, he commences with carbolic acid at once. The strength employed is a $\frac{1}{2}$ per cent. solution. His formula is nearly as follows: Carbolic acid, 15 grains; rectified spirits of wine, 15 minims; tincture of opium, 15 to 20 minims; mucilage and poppy syrup, of each 6 drachms; distilled water to 3 ounces; a tablespoonful to be taken every two hours. To children he gives smaller doses according to age. He has often given his patients as much as seven or eight grains of carbolic acid in the twenty-four hours, and has never had the slightest symptom of poisoning. His experience of former epidemics does not allow him to attribute these favourable results to the small quantity of opium contained in the prescription.—*Lond. Med. Record*, April 30, 1873.

23. *Elimination Treatment of Cholera*.—Dr. WM. SEDGWICK directed attention to the fact that, in cases of cholera, purging was apt to cease when collapse became intense, owing to inability of the bowels to expel their contents. This cessation of purging was followed by abdominal distension from the accumulation of the rice-water flux; and the attempts to restore the action of the bowels by purgative drugs had signally failed. The assumed elimination, by means of purgatives, of an assumed poison in cholera, was undoubtedly based on a misapprehension of the pathology of a flux; and the practical conclusions to be drawn from the evidence adduced were that in a fully established case of cholera, the cathartic method of treatment would tend (1) to deepen the collapse, (2) to increase the flux, and (3) to weaken the expelling power of the alimentary canal.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

24. *Gelatine Suppositories for the Relief of Fecal Accumulations.*—Dr. NAGEL strongly recommends the use of gelatine suppositories for the relief of accumulations of hardened feces in the rectum and sigmoid flexure of the colon. The lower down in the intestines these accumulations descend, the harder and more bullet-like and more decomposed they become. They lose their plasticity, or in other words, their power of adapting themselves to the cylindrical shape of the bowel. They also become heavier, and sink downwards into the hollow of the ileum; they increase or even obliterate the normal Roman-S-like curve of the colon, elongate the rectum, extend behind the bladder, lie across the uterus, and push the bladder towards the left side. This is particularly the case in aged persons. Hence, perhaps, the surgical reason for making the incision on the left side in lithotomy, because it is easier in this way to reach the bladder, and to avoid wounding the rectum. These fecal accumulations may be induced by enlargement or retroversion and retroflexion of the uterus, or through the bladder being only partially emptied of its contents, or by hypertrophy of the prostate, or through the calibre of the rectum being diminished by internal hemorrhoids; defective innervation, atony, and want of due reflex irritability of the bowel, with thinning and atrophy of its muscular coat, may also set up coprostasis. These conditions are common in apoplectic and paralytic cases. The indications for treatment must therefore be to macerate and soften the fecal masses, since they constitute fresh hindrances to a due action of the bowels, giving rise to stretching and paralysis of their muscular coat, and cause flatulence, prolapse of the rectum, involuntary emission of semen and urine, hernia, with venous congestion, and other similar inconveniences. After discussing various objections to eccoprotics, drastic purgatives, enemata of various kinds, and even to suppositories of cacao butter, Dr. Nagel states that suppositories of brown gelatine have been found by him to be of the greatest service in cases of obstinate coprostasis. He finds that when these suppositories have been first soaked for twelve hours in cold water, so as to be moderately swollen and soft on their exterior, and are then pushed as far as possible into the rectum, they gradually break up and soften the hard, bullet-like masses, and make them so soft and slippery that, when the patient's diet and regimen are carefully regulated, we may confidently expect a copious natural evacuation of pultaceous consistence in the course of little more than twenty-four hours. The explanation of their *modus operandi* is to be sought in the hygroscopic property of the gelatine. The suppositories should be introduced in the morning.—*Allgemeine Wiener Med. Zeitung*, April 1, 1873.

25. *Echinococcus of the Spleen; Recovery.*—Drs. ROSENSTEIN and SANGER record a case of this in a woman *æt.* 37, who, previously quite healthy, began to suffer intense pain in the left side about two and a half years ago, and this became steadily worse, while, at the same time, a tumour grew at the painful spot. The tumour was found to be in connection with the spleen, and reached downwards seven centim. below the umbilicus, and formed a curvature towards the right and upwards, the extremity being at the xiphoid cartilage. The area of dulness of the spleen commenced at the ninth rib. The tumour fluctuated distinctly, and was very painful; it did not move with the motions of the diaphragm, and was not covered by any portion of the bowel. An exploratory puncture evacuated a limpid fluid of 1.007 sp. gr., which gave an opaque precipitate upon boiling, or upon addition of an acid. After the puncture the tumour disappeared, but returned in a few days again, much larger than before. A second and a third puncture gave exit to a purulent fluid, in which no hooks, or portions of such, were ever found. This, and the circumstance that the fluid which was at first removed contained albumen, made the presence of echinococci, at first supposed, seem improbable, and the diagnosis was restricted now simply to that of a cyst of the spleen. The increasing size and pain of the tumour made its extirpation necessary, and the operation was performed with perfect success. The cyst which was removed proved, after all, to be an echinococcus sac, in which several cysts, from the size of a pea to that of a hazelnut, were found. Scolices, or elements of these, could not be found, so that it was an instance of so-called acephalocyst. The most remarkable points in this

case are the occurrence of a solitary echinococcus in the spleen, the great painfulness of the tumour, and the presence of albumen in the fluid first removed.—*Irish Hosp. Gaz.*, August 15, 1873, from *Berliner Klin. Wochenschrift*, No. 20.

26. *Preventive Treatment of Uric Acid Calculi.*—Dr. GEO. HARLEY limited himself to the consideration of the means of arresting the formation of uric acid calculi, and facilitating the discharge of those not already too large to be voided by the natural channel, which included all calculi not exceeding the size of field-beans. Tea, coffee, wines, and beers were to be prohibited, or, at least, prescribed in very great moderation, to patients labouring under the uric acid diathesis. He next alluded to the recent proposal of Dr. Day, of Victoria, to give ozonic ether in such cases, and passed on to the consideration of the alkaline treatment. From the very earliest times, alkalies had been resorted to with the view of retaining uric acid in solution until its expulsion from the body; and what the ancients did empirically we moderns did scientifically by improved methods and with much greater success. The alkalies now in most general use were soda, potash, and lithia, in the form of carbonates, citrates, and acetates. Ammonia, on the other hand, was avoided in the uric acid diathesis, on account of the salt which it formed being less soluble than any of the others. The common idea was, that the action of alkalies in the uric acid diathesis was solely and purely a chemical one. There no doubt existed a chemical action, and that a most important one; but beyond this, there was an important physiological action produced in the body, through which the oxidation process was so much increased as to transform the little soluble uric acid into the very soluble urea. To Dr. Basham was due the establishment of this as a clinical fact. In the treatment of the uric acid diathesis, more depended on the dose than on the kind of alkali given. As a general law, it was unnecessary to render the urine more than neutral, except in cases where we were attempting the dissolution of stones already formed; but, even then, there was danger in making the urine either too alkaline, or retaining it in an alkaline state for too great a length of time. Dr. Nunneley found that from ten to eighteen drachms of citrate of potash in twenty-four hours notably diminished the excretion of urea; and Dr. Basham found that half-drachm doses given three times a day augmented it to even double or treble its previous amount. Dr. W. Roberts, of Manchester, found that while sixty grains of carbonate of potash to a pint of water daily dissolved twenty per cent. of an uric acid calculus, the solvent-power of the solution gradually diminished as the solution was made weaker or stronger. Dr. George Harley called attention to the very great importance of the quantity and quality of the drinking water. Patients who had suffered from gravel or stone in one district, frequently got rid of it on removing to another; and this he had been able to trace to the difference in the quality of the water. Hard water, especially that from chalky districts, caused stone; soft water cured it. He consequently recommended the free use of distilled water, not only as a menstruum for the medicine, but also for cooking purposes. Moreover, as the more pure water taken, *ceteris paribus*, the more effectual was the treatment, he gave his patients, when possible, from twenty to forty ounces of filtered rain or distilled water in the twenty-four hours; and where they objected to its unpalatability, a squeeze of lemon or a pinch of salt was added to it. Hard water must in all cases be avoided. The only substantial benefit derived from mineral waters was, he believed, that the medicine was there given in a very dilute form. In mineral waters the relative proportions of their ingredients were not regulated according to the age, constitution, state of health, and other special requirements of the patient. As regarded the benefit of mineral waters in the uric acid diathesis, he pointed out that, contrary to some recent published opinions, it was due chiefly to the alkaline salts they contained. The writer concluded by saying that the chief obstacle to our success with chemical therapeutics in the treatment of calculi lay in the imperfect knowledge of physiology and chemistry possessed by practical men, who almost invariably failed in their endeavours to combine science with empiricism.—*Proceedings Brit. Med. Assoc. in Brit. Med. Journal*, Aug. 30, 1873.

27. *Elephantiasis Arabum treated by Tincture of Iodine Internally and Externally.*—Dr. OLAVIDE, at a meeting of the Academy of Medicine of Madrid (Dec. 12), presented two patients, the subjects of elephantiasis Arabum, whom he had treated by tincture of iodine used both internally and externally. The first patient was a man whose parents had been similarly affected. When he came under Dr. Olavide's care, the circumference of his leg was seventy centimètres; when he was presented to the society, it was scarcely fifteen. The treatment consisted in the external application of tincture of iodine by means of compresses, and the internal administration of the same remedy, commencing with doses of six drops, and gradually increasing the quantity till it reached a drachm. In a fortnight after commencing this treatment, the circumference of the leg had diminished by one-half. The desquamation which took place was aided by the inunction of glycerole of starch. Finally, compression from below upwards was employed. The patient, when the report was made, had been two months under treatment. The only symptoms remaining were vitiligo of the thigh and slight infarction of the dermis.

The second case was one in which the circumference of the leg was sixty-eight centimètres. The same medicine was employed, also with a favourable result. The patient had a slight erysipelatous eruption on two occasions during the treatment, but this proved to be of little consequence.—*London Medical Record*, May 14, 1873, from *El Siglo Medico*, March 9, 1873.

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY.

28. *Researches on Pyæmia.*—Dr. BIRCH-HIRSCHFELD, on examining daily the pus coming from a wound, found that, with the ushering in of the first symptoms of pyæmia, the pus also showed a corresponding change, consisting in the presence of micrococci, either in pairs, strings, or colonies (the latter especially when pyæmia was far advanced or rapid in its course), and in an altered appearance of the pus-corpuscles, which were finely granular, of less definite outline and lustre, and which showed their nuclei very distinctly without the addition of any reagent.

The blood of such pyæmic patients contained similar micrococci, and its white corpuscles had undergone a change very similar to that of the pus-corpuscles. Sometimes the pus of a pyæmic patient would contain, besides these, a quantity of the *bacterium termo* or *bacterium lineola*, which are the common bacteria of most putrescent matter; while micrococcus is, according to Cohn, Clebs, and Hirschfeld, not to be considered the ferment of putrefaction.

Healthy pus coming from a healthy wound or from a simple abscess showed no micrococci and no altered pus-corpuscles, while putrescent pus (either after exposure to air or coming from an unhealthy or gangrenous wound) contained only the bacteria (*termo*, *lineola*, and *bacillus*) due to putrefaction.

The difference between pyæmic and putrescent pus was now further shown by inoculations on rabbits. Healthy pus, injected subcutaneously into a rabbit, gave rise only to a local abscess, without any further disturbances. Putrescent pus gave the symptoms of septicæmia, as described by Bergmann, Sanderson, and others—larger quantities only being fatal, and the fever appearing almost immediately after injection, showing the sepsis curve of Bergmann very well; while pus from a pyæmic patient, similarly introduced into a rabbit, gave rise to a different course of symptoms. The animal remained well for five or six days; and this period was followed by one of high and intermittent fever, diarrhœa, emaciation, and eventually and almost invariably by death from the sixteenth to the twenty-fourth day. Pus, blood, and the metastatic changes in such rabbits, showed again all the distinctive pyæmic properties described.

The importance of these researches, which not only show us the important part which the micrococci play in the production of pyæmia, but which also

define pyæmia as quite distinct from septicæmia (in opposition to the researches of Tiegel, Klebs, and Eberth), is not to be underrated; but a repetition and further extension of them would be highly desirable. Dr. Birch-Hirschfeld examined the different morbid products without any further reagents.—*British Med. Journ.*, June 21, 1873.

29. *Traumatic Herpes*.—According to M. VERNEUIL, the nerve lesion capable of giving rise to vesicular eruptions having the character of herpes or zona, is probably a neuritis, which may be spontaneous, or consecutive to an injury, a wound, contusion, compression, etc. Hence surgeons should count herpes among the complications which may present themselves in the course of treatment of injury or an operation; they must, in other words, admit a "traumatic herpes." Recognizing traumatism as a very general pathogenic cause, it is easy to understand that it may give rise to herpes as well as to erysipelas, tetanus, or any other accident of wounds; it remains to investigate the conditions under which this cutaneous manifestation may show itself. M. Verneuil endeavours to discover these conditions by the examination of a short series of cases. I. A case of fracture of the base of the skull; lesion of several motor nerves; zona of the face. II. A case of amputation of a finger; neuralgia of the stump; herpes of the stump and of the lips. III. White swelling of the knee; fruitless efforts at conservation; very violent pains; amputation of the thigh; divers nervous accidents; herpetic eruption of the stump. IV. Hydrocele, double puncture, inflammation of the tunica vaginalis; herpes of the thigh; death. V. Division of the soft palate (for removal of polypus); guttural and labial herpes. VI. Extirpation of the breast, labial and thoracic herpes; diphtheroid aspect of the wound; cure. After carefully analyzing these and other cases, Verneuil concludes that herpes may show itself during the evolution of an injury, as an independent intercurrent affection; but that it may certainly also arise from that wound, and be really of traumatic origin. Three forms may be distinguished—peripheral herpes, contiguous herpes, distant herpes. It may show itself during the work of reparation—precocious herpes, or a long time after cicatrization—delayed herpes; it may or may not be accompanied by general phenomena. It follows either on the wound of a nerve-track, or of a ganglion, or of a common wound where the ends of the nerves are alone concerned. In certain cases it may be explained by a traumatic neuritis; but in others either reflex action or blood change must be invoked. The prior hæmopathic condition of the patient seems to predispose to the development of traumatic herpes. Traumatic herpes may relapse; it may coincide with erysipelas, and simulate the vesicular variety of that disease. The development of precocious and febrile herpes is accompanied by a change in the granular membrane (which recalls what has been described under the name of diphtheria of wounds) and by a sharp but temporary hyperæsthesia of the wound. The prognosis of traumatic herpes is generally favourable except in the case of septicæmic hernia, but its gravity depends then on the general malady. Herpes at a distance is ordinarily fugacious, and does not compromise cicatrization. Peripheral herpes may be more tenacious; it follows the fate of the neuritis, of which it is only a symptom.—*London Medical Record*, July 9th, from *Gazette Médicale de Paris*, Nos. 20, 22, 23, 25, 1873.

30. *On Peculiar Modes of Transmission of Syphilis in Married Life*.—Dr. VICTOR DE MERIC, in a paper read before the Surgical Section, British Med. Assoc., passed first in review the modes in which a wife may be contaminated by her husband, and *vice versâ*; paying particular attention to those cases where no outward signs of syphilitic taint are apparent. He alluded, then, to the share of gestation in the mechanism of the contamination of the wife, observing that impregnation is not the only mode in which she may become affected with the complaint. Numerous facts had put beyond doubt the modes of transmission just alluded to; but he had met with cases where contamination had been effected in an exceptional manner. The author then related some of his exceptional cases. The first had reference to a gentleman who had been under his care several years before his marriage, and had passed through the

usual periods of syphilis. He married eighteen months after the last symptoms, and a series of healthy children were born. That father suffered now and then from impetigo, and had once very severe osteitis; but neither the wife nor children experienced any contamination. About ten years after marriage, the husband was indiscreet, and caught a chancre which subsequently became phagedenic. Considering the lesion, at first, as a mere abrasion, he took no precautions, and the result, unfortunately, was the breaking out of a fearful set of symptoms of syphilis in the wife. The author now asked whether this case did not prove that the secretion of a soft chancre, seated in a syphilitic individual, might convey the general disease; and added a few remarks as to the effects of pathological secretions from a person suffering, or having suffered from syphilis. The second case was illustrative of the great difference between occasional intimacy and the actual bonds of marriage. In this case the disease was conveyed from wife to husband, though no such accident occurred through several years of former intimacy. The third case related to a married gentleman, who caught a chancre which eventually proved indurated. The lesion was, however, so insignificant at first that no heed was taken. The wife was far advanced in pregnancy at the time, and the consequence was that foetus and mother were contaminated. These facts would go far to prove how infectious was the chancreous erosion in its nascent state. The fourth case was of a remarkable kind, as the gentleman suffered from systemic syphilis without having ever presented a primary sore. Here the wife escaped at first, but eventually had the disease through her infected child. Mr. de Méric alluded subsequently to a few other cases, in which mothers and numerous children remained healthy, though the husbands suffered from syphilis before and after marriage. He concluded by mentioning instances where the wives of syphilitic husbands had fallen into bad health, without presenting any actual symptoms of the disease. This paper gave rise to a discussion bearing chiefly on the question as to the frequency and forms of transmission of syphilis to the offspring, and as to its transmission to offspring without affecting the mother. Mr. Gant mentioned an instance of a married patient who, after having borne healthy children, acquired syphilis from her husband, and after some time gave birth to a healthy child. A recrudescence of the disease some years afterwards was followed by the birth of another healthy child. Mr. Gant mentioned the possibility of these children exhibiting symptoms after the period of the second dentition.—*British Med. Journal*, Aug. 30, 1873.

31. *Extensive Destruction of the Anterior Cerebral Lobes, accompanied by Aphasia*.—Dr. G. BERGHMAN describes in the third No., Vol. IV., of the *Nordiskt Medicinskt Ark.*, the following example of this: A dragoon, æt. 29, was admitted to the Surgical Department of the Royal General Garrison Hospital on June 28th, 1872, having been kicked in the forehead by a horse two hours before. The frontal bone was broken into several pieces, the brain substance protruded from the wound, and some of it was found scattered about the scene of the accident. The patient was able to sit up in bed while the wound was being dressed, and showed no paralytic symptoms, with the exception of a right facial palsy. He was perfectly conscious, and answered all questions put to him clearly. Pulse 112, full and regular. Next day convulsive movements were observed in both upper and lower extremities, especially on the left side. The patient lay apparently quite unconscious, but yet gave clear answers to every question. Pulse 116, temp. 99.7°. The patient made water voluntarily at 8.30 A. M.; it contained no albumen. On the 30th his state was much the same. No lesion of speech. No paresis except the facial palsy. No lesion of sensation. The tongue, freely movable, did not deviate towards either side. The urine had now to be drawn off by catheter; the power of voluntary micturition, however, returned, and remained until the day of his death, the 5th of July. On this day he became comatose, with stertorous breathing, floccitatio, and convulsive movement of the extremities. The pulse, difficult to count, was about 160, and extremely small. The cerebral substance at the bottom of the wound continued inflamed and stinking. Attempts to swallow were induced by the washing of the wound. The patient died at 3.30 P. M.

A very full account of the autopsy is given. It is mentioned that on the right side of the cerebrum only those parts of the cortical substance lying close to the middle line were damaged, *i. e.*, the olfactory convolution, internal orbital convolution, and the posterior portion of the posterior orbital convolution as far as the fissure of Sylvius. But on the left the whole under surface was involved, and the inflammatory action had spread, not merely outwards and upwards to the third frontal convolution, which was altogether destroyed, softened, and discoloured, but also to the *island of Reil* on this side, which, however, did not present the same degree of discoloration and breaking up. The lateral ventricles, dilated, contained a very large quantity of clear fluid. With these and other extensive injuries of the brain-substance, especially on the left side, there was, as already stated, no aphasia. Two days before his death, indeed, the patient, when asked to what squadron he belonged, answered, "To the Sigtuna squadron," whereas he really belonged to the Upsala squadron. It is to be remarked, however, that another squadron, called the "Sigtuna squadron," actually was attached to his regiment.—*Dr. J. W. Moore's Report on Scandinavian Med. in B. and F. Med.-Chirurg. Rev.*, July, 1873.

32. *Application of Auscultation as an Aid to the Diagnosis of Stone in the Bladder.*—Dr. HENRY H. HEAD, Physician to the Adelaide Hospital, states (*Irish Hospital Gazette*, July 15, 1873), that he sounded a gentleman's bladder and was pretty sure that he detected a stone, but did not think the evidence absolutely conclusive, when it occurred to him to try auscultation, to see if it would assist his diagnosis. He accordingly applied one end of an India-rubber tube to the top of the catheter with which he was examining him, and the other to his ear, and at once heard, with the greatest distinctness, the instrument strike the stone. The evidence afforded was so conclusive, that there could no longer be any doubt on the subject.

He adds: since "I saw the above case, I have performed many experiments with substances of various sizes and degrees of hardness, placed in a bladder distended with water, and have never failed to discover them by the sense of hearing, which I have found much more delicate than that of touch. Even a small piece of soft chalk, not larger than a pea, can be most easily detected; the slightest touch of the catheter or sound being conveyed to the ear, when it could not be recognized by the hand.

"I feel confident this method of applying auscultation will afford most material aid to the surgeon in forming a diagnosis in doubtful cases."

The apparatus used by him consists of a small vulcanized India-rubber tube, about eighteen or twenty-four inches long, to one end of which an ivory ear-piece is attached, similar to that used for ear trumpets; and into the other end is inserted a metallic plug, with a tapering end protruding, which should be pressed tightly into the canal of the catheter; or, if a solid sound is used, the end of the tube, without the plug, may be fastened on it.

33. *Antiseptic Treatment of Wounds.*—Prof. JOHN WOOD, in his admirable Address on Surgery before the British Medical Association at its recent meeting, remarked: "Pyæmia, septicæmia, and erysipelas are undoubtedly the greatest troubles in modern surgery." . . . "When, therefore, a system of dressing wounds is brought before us, sanctioned by worthy names and supported by the results of cases, offering a means of escaping these terrible enemies, it is our bounden duty to give it a fair and full trial.

"Such is the antiseptic system of dressing wounds originally developed by Le Maire in 1860 and 1865—in the use of coal tar, and its derivative carbolic acid, as an application to wounds. As long ago as 1815, French chemists had proved the antiseptic qualities of oil of tar. . . .

"A great impulse was given in this country to the use of carbolic acid by Professor Lister, in February, 1867, well known to the Association from the exposition of his method by that talented surgeon to the meeting at Plymouth. Since that time I have given his system, I believe, a fair trial at King's College Hospital. At the same time, and under the same conditions as far as could be obtained, I have employed the solutions of carbolic acid in oil and water, and

those of metallic salts, as well as other antiseptic substances, such as chlorozone, etc., but without the elaborate attempts to exclude the unpurified atmospheric air which Lister deems essential.

"As an experimental and scientific mode of research, which may turn out to be also a converging line in Surgery, I have the highest possible respect for Professor Lister's system of treating wounds.

"Upon his theory of germs, it is consistent and simple enough; but it is as a practical method of treating open wounds, available under ordinary circumstances in hospitals and private practice, in emergencies, and on the battle-field, that it must be estimated and will ultimately take its place; and it is with that view that I have put it, as far as possible, to the test. I began it at a time when the hospital was in a good hygienic condition, and the cases for that time did admirably. I had some cases quite equal to any described by Professor Lister himself. I, at the same time, tried the application of dry lint, without any moisture whatever, to the wound, and in many cases, especially in breast cases, the results were also perfect. In one breast case union by adhesion occurred throughout the wound. I also tried the application of the chloride of zinc solution in the manner originated by Mr. De Morgan, and very good results ensued, viz., healing with the formation of little or no pus. After about six months, there came into the hospital a very unfavourable change, and, from inquiries made at the time, I concluded that a similar condition prevailed in most or all the London hospitals. Erysipelas and its concomitant pyæmia began to show themselves, the former not springing up in the hospital itself, but imported with patients. The wounds now began to suppurate more, primary healing was less common, and the erysipelatous blush appeared with blame-worthy impartiality in cases treated in all kinds of ways, and almost as impartially on my own antiseptic side of the hospital as on my colleague Sir William Fergusson's non-antiseptic side. But this I feel bound to say, that there was little or no putrefaction, as evinced by the odour, in any of my cases, which my eminent colleague shrewdly attributed to the carbolic smell overpowering all others. Upon this point, however, I must say I did not agree with him. I had one case of amputation of the thigh for a tumour of the lower end of the femur, in a man about 60. I treated it by Lister's method, carefully carried out, and, from beginning to end, there was very little discharge and no putrid or offensive smell whatever; but the wound did not heal, the end of the bone remained unadherent and devoid of granulations, and the man lingered for two months in a declining and emaciated state, and finally succumbed to chronic pyæmia with secondary abscesses in various parts. The occurrence of many other cases similar in character to this has convinced me that the agencies, whatever they are, in pyæmia, operate in the general system, or, if through the atmosphere, in other channels besides the wounded part, as in cases of pyæmic poisoning from deep internal glandular pus deposits and in other acute and chronic tubercular affections.

"Some time afterwards I had a case of compound fracture of the tibia and fibula, with a limited aperture in the skin, in a man nearly 70 years of age. I put it up carefully in Lister's method, carbolic spray, prepared gauze and jaconet, complete. On dressing it several days afterwards, suppuration was found to have occurred, and the pus had accumulated considerably in the dressings. The treatment was continued, and kept the wound free from all unpleasantness, but still the amount of suppuration was very considerable. There was burrowing of pus along the muscles and bones, and a total want of union. In this case I was ultimately obliged to amputate below the knee. The amputation wound was also treated antiseptically, but still the amount of pus was considerable, and although from the man's age and reduced condition, the progress of healing by granulation was slow, the case did ultimately exceedingly well, and made an excellent stump.

"In some cases of psoas abscess treated by Lister's method we had marked success so long as the hospital was healthy. When erysipelas and pyæmia appeared, however, we had others in which the pus in the abscess became putrid and offensive after the first evacuation under the spray and with all the precautions, and I was obliged to make free openings and introduce drainage tubes

through which the abscess could be washed out thoroughly with antiseptic. Such cases show that we cannot without danger depart, in the generality of wounds, from the old rule of providing a free exit for all purulent and offensive discharges, and, for the want of this, the exclusion of air is not a sufficient compensation. I cannot, consequently, approve of the plans originated by Baron Larrey and followed by Gosselin, and, more lately, by J. Guerin and Maisonneuve, of "occlusion pneumatique" the amount of resemblance to which, in Lister's method, constitutes, it seems to me, some part of its deficiencies. To a great extent, this objection also exists to the plan followed during the second siege of Paris by Alphonse Guerin, of using thick investments of compressed cotton-wool after washing the wound with alcohol, and then leaving it, without disturbance or removal of the deeper layers, for periods varying from a fortnight to two months, or even more. This plan for keeping from the wound injurious atmospheric influences seems to have been deduced from Professor Tyndall's experiments upon the purifying results of the cotton filter of Pasteur. It was shown by Hervey that, as used by Guerin, it neither prevented putrefaction and fetor in the wound, nor the formation of abundance of microzoa therein. Here again, we have instances of the propriety of that regular and systematic inspection of wounds which the practice of hermetically sealing them up prevents us from obtaining.

"In clean incised wounds, where the formation of pus is not likely to occur, as in some plastic operations, the hermetically-sealing plan will no doubt maintain its position in general use in its most useful form of collodion. But, when supuration ensues, it must be got rid of. Its absorption by dry earth, as advocated by Dr. A. Hewson of Pennsylvania, has the disadvantage of being dirty and offensive to the patients, and of obscuring by its colour the natural appearance of the wound when in contact with it, but as a substitute when better absorbents cannot be obtained, it seems to be of some value. Much the same may be said of charcoal. When this substance is combined with coal-tar, however, as in the way advocated by Dr. Beau, it would seem that a great part of the antiseptic vapour would be absorbed by the charcoal, and the two remedies to some extent thus neutralize each other."—*Brit. Med. Journ.*, Aug. 9, 1873.

34. *Isolation and Treatment of Wounds*.—Mr. GEO. W. CALLENDER described to the Surgical Section, British Med. Assoc., a plan of treatment which he had followed for several years in St. Bartholomew's Hospital, and of which the results were at least as satisfactory as those following the employment of the antiseptic method, while it was much more simple. In 199 cases treated in this way there had been six deaths; and in 28 cases of compound fracture, and 33 of amputation (including 14 of the thigh), there had been no deaths. The author insisted on the removal of foreign bodies, and expressed his objection to ligatures, as being in fact foreign substances. Instead of tying arteries he used torsion. After all bleeding had stopped the wound was washed with carbolic acid (1 in 20 of water), closed with silver sutures, and fitted with a drainage-tube (a suitable form of which Mr. Callender had had made). After this, layers of lint dipped in carbolized oil (1 in 12 of olive oil) were laid over the line of incision or over the laceration; and over these a quantity of cotton-wool for warmth and protection. After the dressing the wound was placed in such a position as to secure absolute rest. After the first day, the drainage-tube was generally removed, and the dressings were applied as before. No special provision was made for excluding the air. As far as practicable each case was placed between patients free from wound or discharge, and the wound was cleaned by means of a camel-hair brush, with a solution of carbolic acid in five parts of spirits of wine. Mr. Callender remarked that in this plan antiseptic treatment was used in a limited way, and that the results which he brought forward showed that, with the exercise of proper care and supervision, patients did as well in a large hospital as anywhere else. Sir John Rose Cormack (Paris) said that he had, during the two sieges of Paris, treated a great variety of the worst description of shot and shell wounds, and he had seen similar cases treated contemporaneously by others, and his firm conviction was, that the success was not so much with the skilful operator as with the man who patiently and with

scrupulous care conducted his dressings, and attended to the hygiene of his patients. Mr. Lister's system was not adopted in the American ambulance, nor in either of the hospitals of which he (Sir John Cormack) had charge; and yet in all these the success was very remarkable. The system which Sir John Cormack adopted (varying it according to circumstances) was to tide over the period of shock by large opiates; to use in all the dressings abundance of *étoupe goudronnée* or oakum, which, from its antiseptic properties and its power of absorbing the discharges, as well as its elasticity, was used universally in the American and English ambulances. He gently washed the wounds and the surrounding parts at each dressing with creasote water, to remove adherent noxious discharges; and the crevices were carefully cleansed by injecting the same fluid. When necessary and at all possible, incisions were made, and drainage-tubes were used to prevent the accumulation of discharges in crypts or pouches. The very simple and effectual method suggested by Mr. Callender, of lightly brushing out the cavities with a camel-hair pencil, would no doubt have answered as well as, and in some cases perhaps even better than, the syringe. He attributed much of Mr. Lister's success to the general medical and hygienic treatment which that gentleman strenuously carried out, rather than to the niceties and complexities of his special system. In support of his views, Sir John referred to some of his cases of lacerated wounds and amputations, in which, he believed, recovery was mainly attributable to the system which he briefly described, and in some instances, to the additional precaution of changing the personal and bed linen once, and sometimes even more frequently, in the course of the day. This had been done in one case where the patient had seventeen lacerated wounds, and made a good recovery. An additional precaution was generally taken—to wit, having the patients carried out on stretchers to the free breeze of the garden, whenever the weather permitted, so that their bedding and the wards might be cleaned. In addition to this, the floors and beds were regularly watered with creasote water several times a day. Mr. Gant (London) was of the same opinion with regard to Mr. Lister's plan. Mr. Green (Bristol) had found that many years of large hospital experience only wedded him the more firmly to the doctrines long since taught him by Mr. Lawrence—namely, extreme simplicity in the treatment of wounds, and above all, a free outlet for discharges. Mr. Cresswell (Merthyr Tydfil) and Mr. Hemingway (Dewsbury) also spoke. Mr. Lund (Manchester) said that Mr. Callender's method was really antiseptic, while its simplicity was to be admired. Mr. Hey (Leeds) had given Mr. Lister's plan a fair and unprejudiced trial, but repeated experience of it had convinced him that even when carried out carefully by Mr. Lister's own pupils, the method showed no superiority over a simple plan of treatment such as that employed by Mr. Callender. He had even seen union delayed in wounds by reason, as it seemed, of the employment of the more elaborate antiseptic dressings, although in other cases it answered all expectations. Mr. Callender, in reply, pointed out that his plan involved absolutely no precautions against the admission of air, and could not, therefore, be considered as a proof of the superiority of Mr. Lister's method of "antiseptic" treatment.—*British Med. Journal*, Aug. 30, 1873.

35. *Abdominal Aneurism successfully treated by Proximal Pressure on the Aorta*.—Dr. EDWARD HEADLAM GREENHOW reported to the Royal Medical and Chirurgical Society, May 27, a case of this. In the year 1864 Dr. Wm. Murray communicated a case of the same, successfully treated by the same plan. The patient remained well for six years, and then died of a second aneurism. It was found that the remains of the original aneurism consisted merely of a fibrous mass, and that complete collateral circulation had been established by the enlargement of vessels both on the outside and inside of the abdominal cavity. Last year a similar case, cured by the same means, was communicated to the Society by Dr. Moxon and Mr. Durham, of Guy's Hospital. These are the only two such cases which have as yet been fully recorded; and the author trusted that the report of a third case would not be considered superfluous, more especially as in this latter some of the results of the compression of the aorta appeared to have an interest apart from

that belonging to the cure of the aneurism. Christopher F., aged 28, warder in the House of Correction at Kendal, was admitted into the Middlesex Hospital, under Dr. Greenhow's care, on May 20, 1872. He was a strong-looking man, and his health had been good until December, 1868, when he was on board H.M.S. *Princess Charlotte* as an able-bodied seaman. Whilst drawing water from alongside he suddenly felt something give way in his abdomen. Was soon after invalided, and on his return home he obtained employment as warder. In December, 1871, he again began to suffer and lose strength. On admission, he complained of pain in the abdomen and loins, shooting downwards to the groins and thighs. A somewhat globular pulsating tumour, about the size of a large orange, was found in the abdomen, immediately above the umbilicus. It extended more to the right than to the left of the median line, and beat forcibly with an expanding lateral as well as with a forward impulse. Firm pressure over the aorta above the tumour, when the patient was sitting up, stopped the pulsation for the time being. The medical staff of the hospital having agreed with the author as to the nature of the tumour and the means to be attempted for its cure, Mr. Hulke undertook to apply the tourniquet. May 25: Chloroform having been administered, Lister's tourniquet was screwed down between the tumour and the xiphoid cartilage until pulsation ceased both in the tumour itself and in the femoral arteries. On account of vomiting the pressure was withdrawn after three-quarters of an hour. The impulse remained as before, but the tumour felt rather more solid. 27th: When the patient was thoroughly under the influence of chloroform, Mr. Hulke applied the tourniquet with the same effect as before, and with two brief intermissions the pressure was maintained during four hours. After some time there appeared marked lividity of the lower extremities, which, as well as the lower half of the abdomen, became quite cold. Temperature taken between the toes was 90°. Sphygmographic tracings of the radial pulse showed increased arterial tension. The breathing became very shallow and gasping. Pulse from 100 to 120, respiration from 44 to 56 per minute. The removal of the pressure was immediately followed by the subsidence of all these symptoms. The pulsation in the tumour was decreased, the forward impulse being much less forcible and the lateral expansion only slight. For several days the patient suffered much from vomiting, the vomit containing altered blood, and from pain, numbness, and coldness in the lower extremities, more particularly in the right limb, which gradually disappeared as the circulation became re-established. The impulse in the aneurism very greatly decreased, until on June 10 it could scarcely be felt, and the patient was allowed to sit up for a short time. June 25: The pulsation in the tumour having decidedly increased again in force during the previous week, the tourniquet was once more applied, so as thoroughly to compress the aorta, and the pressure was maintained for three hours almost continuously. The pulse and breathing showed the same characters as during the former operation, and there was the same coldness of the lower extremities and of the right more than the left foot. When the tourniquet was removed there was forward pulsation of the tumour, but no lateral expansion, and the tumour felt firmer and more solid. During several days the vomiting and coldness of the extremities continued as before. The urine was albuminous for two days. The impulse in the aneurism continued to diminish until July 1, when it could not be seen, and scarcely felt. On July 14 the patient was well enough to be discharged home to Kendal. September 20: In accordance with Dr. Greenhow's request, the man returned to show himself. No pulsation was found in the seat of the aneurism, nor was there any distinct tumour remaining; but above the umbilicus, to the right of the median line, was an undefined somewhat movable hardness. No pulsation could be detected in the aorta from an inch above the umbilicus downwards, nor in the femoral, popliteal, or anterior tibial arteries. Mr. Noble, of Kendal, who sent the patient to the hospital, wrote to Dr. Greenhow quite recently to say that the man was in perfect health. It would appear certain from this case, taken in conjunction with Dr. Moxon's and Mr. Durham's, that the process of cure by coagulation of blood in the sac of the aneurism is not necessarily a rapid process, as it was in Dr. Murray's

case, but may last during many days, and sometimes even for weeks. The direct effects of the pressure upon the pulse and respiration were very remarkable, and not less so the secondary effects of the disturbed circulation on the stomach and kidneys, producing the hæmatemesis and albuminuria which followed the operations. The occurrence of such symptoms would seem to suggest that the intense arterial distension caused by the treatment might be attended by serious danger to persons suffering from any kind of organic disease, especially degenerative disease of the arteries.

Mr. HOLMES did not think that the operation was free from danger; in some cases it had been followed by death. Mechanical lesions of the gravest kind were often produced. He did not think the treatment should be employed in all cases. If an aneurism was rapidly enlarging it might be resorted to; but it was beyond justifiable surgery to do so if milder means would do. There was distinct evidence of injury from the violent pressure on veins. In three cases death had occurred. Then the prolonged application of chloroform was in itself a source of great danger. He thought a surgeon ought to consider if abdominal aneurism could not be cured by milder means. Low diet and rest often ameliorated. In other cases it was amenable to slow pressure, as by a pad or finger for a portion of the day, and without the danger attending more forcible pressure. The latter was more efficient as well as more dangerous. Though the three successful cases had been reported, yet there were others which had been unsuccessful. As to the coagulation of the blood, he thought there were two ways in which it might occur—firstly, gradually, as shown in Mr. Durham's and Dr. Moxon's case, in one month; secondly, by the impaction of a clot in the artery, as in Dr. Murray's case.—*Medical Times and Gazette*, July 19, 1873.

36. *Treatment of Axillary Aneurism.*—Prof. T. HOLMES, in one of his admirable lectures on Aneurism now in course of delivery before the Royal College of Surgeons of England, laid down the following propositions which he thinks are established by the facts which he brought forward in reference to axillary aneurism.

1. That there are a great number of these aneurisms, both traumatic and spontaneous, which are amenable to gradual intermitting pressure, when carefully applied to the artery above the tumour.

2. That in cases where this is not possible, from the pain which the patient experiences on pressure, the application of rapid total compression under anæsthesia may effect a cure.

3. That the ligature of the subclavian artery is so dangerous an operation, both from its own risks and from the proximity of the sac, that it ought to be restricted to cases where pressure has failed, and to those in which, from the size and rapid growth of the axillary tumour, the surgeon thinks pressure unadvisable.

4. That the old operation is to be preferred to the ligature of the subclavian in cases of ruptured artery, and that it may be practised in cases where, from the elevation of the shoulder or from the extent of the tumour, the surgeon would find it difficult to tie the subclavian, or fears in doing so to injure the sac; but that the anatomical relations of axillary aneurism render this a peculiarly hazardous proceeding, and the surgeon should always be prepared to amputate if necessary.

5. That in very large axillary aneurisms, if any treatment be adopted, the arm should be amputated at the joint after ligature of the subclavian.—*Med. Times and Gaz.*, Aug. 23, 1873.

37. *Vertebral Aneurism.*—Mr. T. HOLMES, in one of his recent lectures on the Surgical Treatment of Aneurism (*Lancet*, July 26, 1873), presented the following conclusions to which present experience points on the subject of vertebral aneurism:—

1. A traumatic aneurism may be taken to be vertebral when it is situated in the course of that vessel, and when its pulsations are not commanded by compression of the lower part of the common carotid.

2. When a traumatic aneurism is situated as above, and its pulsations are commanded, however completely, by pressure on the common carotid low in the neck, it ought not to be treated as being carotid, or as affecting a branch of the carotid, unless it is clearly proved that its pulsations are stopped by pressure applied above the level at which the vertebral ceases to be compressible—i. e., above Chassaignac's "carotid tubercle."

3. An aneurism diagnosed as vertebral may be treated by compression (gradual or rapid, as the case demands) of the root of the vertebral artery in the neck, if this is found feasible.

4. If indirect compression will not stop the pulsation, or if it cannot be borne, the tumour should be subjected to direct compression and refrigeration, to which internal remedies may be added; and possibly the subcutaneous injection of ergotine may be of use.

5. If these means fail, and the tumour appears likely to burst, or if it has burst, the sac should be opened with all due precaution, and an attempt made to tie or plug the wounded artery.

6. A wound known or suspected to be of the vertebral artery should be treated either by direct pressure or by ligature of the vessel in the wound.

38. *Results of Excision of the Head of the Femur.*—In the third sitting of the second conference of the Congress of German Surgeons (*Berliner Klinische Wochenschrift*, May 31, 1873), Herr LANGENBECK presented a case of resection of the head of the femur, which was interesting because it had been performed in the presence of many members of the congress at its meeting in the previous year, and because the suppuration in the hip-joint had been induced by an attack of gonorrhœa, followed by suppurating bubo. The patient, aged twenty-two, had contracted gonorrhœa in April, 1870, having previously enjoyed perfect health. A bubo appeared which suppurated, was opened, and then healed, after an interval of fourteen days. The patient returned to his work, but remarked in Oct. 1871, slight tenderness in the groin, an abscess formed, which was opened, and finally the hip-joint became involved. In Jan. 1872, he was received into the Jewish hospital with evidence of suppuration in the joint, extension was applied which diminished the pain, but the suppuration increased, and hectic followed. In April an examination under chloroform was made; the joint was found in a carious condition, and the partially absorbed head removed through a longitudinal incision. Almost no blood was lost. On account of a large bed-sore on the sacrum, the after-treatment was conducted with the patient lying on his face. At the end of June the operation-wound and bed-sore had both healed, and the man was allowed to go about with an apparatus. In Dec. 1872, the instrument was laid aside, and the patient was able to move about with a high heel. Soon he could walk for hours at a time without difficulty. The shortening amounted to four centimetres. Around the acetabulum was a large mass of callus with which the femur seemed to articulate. The motions in the joint were impaired, but still considerable.

In the discussion which followed the presentation of the patient, Professor HUTER said he had thrice had occasion to examine the healing process of an excised hip on the dead body. In both cases recovery had reached a certain point; the children had left their bed, and could go about to some extent, with, however, fistulous openings, which remained unclosed; death occurred from amyloid degeneration of the viscera. In both cases the trochanter minor rested against the acetabulum. In other cases in which complete cure occurred, he believed the same relation existed, the usefulness of the limb was very encouraging. Some months ago he removed the greater part of the great trochanter, in a case of resection of the hip, and four weeks after the operation the patient was not only able to rise out of bed, but to rest on the limb in walking. In another case, observed some nine days after the operation, the trochanter minor seemed to rest against the acetabulum, and the patient, sixteen years old, could walk a German mile on foot with no assistance but a stick.

Professor VOLKMANN considered it of the last importance to prevent adduction of the limb after resection, as the end of the resected bone had no point of resistance, and was dragged up more and more on to the crest of the ilium.

He therefore, after the first week, strongly abducts the limb, so that the end of the resected bone rests in the acetabulum. He does not recommend it at an earlier period, as the pressure of the bone surfaces against each other might be then injurious, and their healing retarded. During the early period he uses extension or gypsum bandages. Professor Volkmann explained the occurrence of the suppuration in Langenbeck's case, by the pus passing into the bursa of the psoas and iliacus muscles, and so into the joint.

LANGENBECK stated that he had, during the previous year, observed two other cases of secondary suppuration of the hip-joint after bubo. The first patient came to hospital with extensive suppuration round the joint, and died from exhaustion. The joint was completely destroyed; the capsule had given way in several places, so it was impossible to tell at which point the suppuration had originated, or entered the articulation. The last case was still under treatment; the symptoms pointed clearly to pus in the joint. Langenbeck thought it possible that the inflammation might have travelled through the iliac bursa into the joint, but considered it more probable that the lymphatic vessels were the means of communication. That there is a close relation between the lymphatics of the joint and of the groin, seems to be proved by the frequent occurrence of swelling of the inguinal glands, as a consequence of recent coxitis.

Professor LUCKE said that Langenbeck's account reminded him of a patient with deep abscesses after bubo in the groin stretching up behind Poupert's ligament. Suddenly, symptoms of inflammation of the hip set in, with septicæmia; the patient died. The examination showed that the hip-joint was filled with pus, and its capsule perforated.

Speaking of Volkmann's suggestion to abduct the limb after resection of the hip, and in that way maintain the length of the extremity, Professor BILLROTH observed that this method was usually successful, as he could testify from his own experience in a case of ankylosis with actual shortening. After breaking down the ankylosis, he extended and fixed the limb in the strongly abducted position; recovery took place in a gypsum bandage, and the result was especially favourable.—*London Med. Record*, July 16, 1873.

39. *Treatment of Effusions into the Knee-joint by Aspiration.*—M. DESPRÈS, in the name of a committee consisting of MM. Veneuil, Cruveilhier, and himself, made a report to the Surgical Society of Paris (May 14, 1873), on the memoir of M. Dieulafoy, on the above subject. M. Desprès stated that the memoir was founded on twenty-two cases, in which sixty-five punctures had been made without ill effect, for serous, sero-purulent, and purulent effusions. According to the Committee if the duration of the treatment be considered, the new method generally does not effect a more speedy cure than the ordinary treatment. In some cases, however, the rapidity of the cure was remarkable. The mean quantity of liquid abstracted by aspiration was in traumatic hydrarthroses 60 grammes, in rheumatic hydrarthroses 70 grammes, in purulent effusions 40 grammes. In several of the patients the effusion has been reproduced and the puncture repeated three or four times.

M. Desprès declares that in traumatic hydrarthroses, the old method gives as good results as the aspiratory method. In rheumatic hydrarthroses the aspiration is useless. In hemorrhagic arthritis blisters should be preferably employed. In chronic hydrarthroses which resist ordinary treatment, aspiration may be usefully employed. As to sanguineous articular effusions, in which M. Dieulafoy has not applied his method, it would be dangerous to puncture them.

In the discussion which followed the reading of this report, and in which MM. Blot, Dubreuil, Verneuil, Demarquay, Dolbeau, Panas, Marjolin, Duplay, See, Tillaux, and Guyon took part, the conclusions of the committee were generally approved. Puncture of the knee was considered as a very serious operation and might even be followed by fatal results, of which M. Debreuil related an instance.

In the opinion of nearly all the members who spoke, the ordinary method should be preferred to the one proposed by M. Dieulafoy. It cures as effectually and without danger. The acute pains which accompany acute hydrarthroses are

more effectually combated, according to M. Vernenil, by the immobilization of the limb, than by aspiratory puncture, for if this operation is followed by instantaneous cessation of the pain it reappears, in a few hours as intense as previously.—*L'Union Médicale*, 23 Aug. 1873.

40. *Resection of the Ankle-joint and Os Calcis*.—In an inaugural dissertation (Greifswald, 1872) Dr. ALBERT KELLER gives an historical account of resections in general, and also refers to Read's case of so-called excision of the ankle after Fontenoy, which he characterizes as a mere extraction of fragments of bones after gunshot injury to the joint.

Langenbeck, since 1850, performed the operation four times in his private practice, in all cases carefully preserving the periosteum. Very complete reproduction of bone ensued, and in two cases the joint recovered perfect motion. Neudörfer, in the Schleswig-Holstein war, operated once, and Langenbeck five times. In the Bohemian and the Franco-Prussian wars, the author asserts, excision of the ankle-joint was frequently performed, and with such successful results that the operation may now be considered as fully accepted both in war and peace surgery.

The author refers to two successful cases, one performed by Mr. Holmes, and the other, in 1857, by Dr. Murray, of Belfast.

It is unnecessary to detail the indications which the author, following his teacher, Professor Hueter, gives for the performance of the operation; nor the operative procedure itself, which is by the lateral L-shaped incisions, embracing the malleoli, as originally recommended by Moreau père.

The after-treatment should commence on the operating table, by the careful cleansing of the wound, and passing, after suturing the upper portions, a drainage-tube from side to side of the wound cavity.

The foot should then be held slightly extended, so that the cylinder of periosteum is put upon the stretch, and a gypsum bandage is to be forthwith applied.

The reproduction of bone is rapid, so that by the end of eight days a firm case of periosteum, with newly deposited bone, is often formed. Sometimes trouble is experienced from the excessive amount of new osseous tissue which is formed.—*London Med. Record*, July 16, 1873.

41. *Treatment of certain Forms of Bronchocele by Injections of Iodine*.—

Dr. MORELL MACKENZIE stated that in a former paper he had described in detail the various methods applicable to the several kinds of enlargement of the thyroid gland. In discussing the treatment of fibrous bronchocele in the article referred to, he did not do justice to the method recently introduced by Prof. Lücke, of Berne. A larger experience, made under more favourable conditions, had convinced him that the treatment of certain forms of bronchocele by the subcutaneous injection of iodine into the substance of the enlarged gland, was of the greatest value. The following was the plan of treatment, which, in accordance with Dr. Lücke's recommendation, the author had employed: Thirty drops of the officinal tincture of iodine were injected into the substance of the gland once a week for the first two or three weeks, and afterwards once a fortnight, as long as was necessary. It was well to give iodide of potassium internally, at the same time; but no medicine was given to any of the patients whose cases were now related. The advantages of the treatment were, that it did not cause any constitutional disturbance or local irritation (suppuration). In this respect, it was preferable to treatment by setons and caustic darts. The only disadvantage of the method was its slowness; this, however, could scarcely be considered a drawback, except when the enlarged gland caused urgent dyspnoea. The cases which were briefly related had been taken indiscriminately as they presented themselves, or were found in the case-book of the Throat Hospital on July 24th. Of the sixteen cases, fourteen were fibrous, and two adenoid, or soft. Fourteen patients were females and two males. Eleven were completely cured, in four a considerable reduction resulted, and one case completely resisted treatment. In one case the neck was reduced by $3\frac{1}{2}$ inches in less than six months; in two cases a reduction of

2½ inches took place. The duration of treatment varied from one to eight months, the average being four months. The author concluded by remarking that the treatment of cystic cases by injections of iron, as previously recommended by him, was, of course, much more rapid, and therefore more striking; but the fibrous cases were undoubtedly the most difficult to treat of those varieties met with in practice. Dr. Mackenzie added that suppuration had not occurred in any case where the injection had been made into the gland itself. The failures of the treatment were 5 per cent. Mr. Meade's treatment by division of the fascia in the central line, where symptoms of dyspnœa indicated mechanical pressure, had been found successful in alleviating this.—*Proc. Brit. Med. Ass.*, in *Brit. Med. Journ.*, Aug. 30, 1873.

42. *Nine Cases of Colotomy in Females*, by CHRISTOPHER HEATH.—Two operations were undertaken for cancer of the rectum, causing obstruction, which had existed many days; both patients died. Three operations were performed for scirrhus in an earlier stage, before obstruction had occurred; and of these one died and two recovered—one of the latter dying seven months afterwards, and the other being now alive and well, seven months after the operation. Two operations were performed for syphilitic ulceration and stricture; both recovered, and are alive now. One operation was performed, as a last resource, in a patient worn out with extensive fistula and ulceration (probably syphilitic) before she applied for relief, and proved fatal. The operation was performed for the relief of a recto-vesical fistula, and was perfectly successful. The result therefrom was four deaths and five immediate recoveries. Mr. Heath appended some observations on the operation and its results, urging its earlier adoption in cases of obstruction and intractable disease, and showing the slight risk to the patient the operation *per se* inflicted.—*Proc. Brit. Med. Ass.*, in *Brit. Med. Journ.*, Aug. 30, 1873.

43. *Radical Cure of Rupture*.—Prof. JOHN WOOD, in his Address on Surgery, remarked, "I have long thought that we might, in favourable cases, safely do more than we now attempt, to prevent a return of the protrusion after the operation for the relief of strangulation. After performing operations for the radical cure more than two hundred times, I had grounds for the belief (which other operations on the peritoneum also favoured) that in a healthy subject, the peritoneum might be dealt with as freely and as safely as any other tissue; and also, that the chances of bad results from peritonitis would depend upon the injury sustained by the bowel in strangulation, rather than upon any way of dealing with the peritoneal sac and parietes after the strangulation had been relieved, provided that due drainage be secured. In cases where the bowel and omentum are congested only, and most likely to recover when placed into their natural cavity, especially in young and healthy subjects, I concluded that the attempt would be justified, and would probably be successful. If so, the advantage of preventing a lifelong trouble by the operation which relieves strangulation is obvious."

In answer to the objection made to his operation that evidence is wanting as to the permanency of the cure, he states "out of 188, most of them unselected cases of inguinal hernia, of which I have notes (including 7 females and 4 cases of double rupture, both operated on), in 107 cases the results are pretty perfectly known. I find that 51 of these were more or less unsuccessful; 42 returned in the first year after operation—that is, the patient could not do without wearing a truss after the first year. Of these, by far the greater number were so much improved that they were made comfortable by a truss, which was not the case in most instances before the operation. Some, but not many, were as bad as before the operation. Mr. Kingdon, of the City of London Truss Society, has kindly forwarded to me the names of twelve of those who had applied to that institution for the supply of a truss after an operation at my hands.

"56 out of the 107 were cases which continued to be successful subsequently to a year after the operation, as ascertained either by direct examination by myself, other surgeons, or satisfactory to the patient himself, and either wear-

ing no truss at all, or only occasionally, as a precaution, after the first year from the operation. Of these—7 were noted from thirteen to twenty-one months after the operation: 7 two years; 7 three years; 7 from four to six years; 7 from six to eight years; and 4 from nine to eleven years after operation. Reckoning operations on both sides and repetitions of the operations, I have done the operation more than two hundred times. Out of, these, I have had three deaths; one from pyæmia, one from erysipelas, and one from peritonitis. These have been made public to the profession on more than one occasion, because I judged it right and fair that in an operation of this kind the facts should be made known as far as possible. In the last case, as shown by the *post-mortem* examination (published in the *Medical Times and Gazette* in 1866), the peritonitis was found not to have originated in the parts operated on, but in a knuckle of bowel which had been lodged in the hernial sac before the operation, while the patient was wearing a strong truss. The cases in which any signs of peritonitis were observed were not more than about twenty in the whole number. One and a half per cent. is not a high average of deaths from surgical accidents, and there are very few operations of like kind, as, for example, for the removal of deformity, the cure of prolapsus of viscera, or of hæmorrhoids, which could show more favourably either in this respect, or in respect to the somewhat severe test of the length of time in which they have been known to be without a relapse after the operation. And since 42 out of the 51 known unsuccessful cases proved to be so within the first year after operation, and most cases were examined once or more at various intervals of time after the operation, I think that, in respect to this point, we have a right to claim the probability of more and the certainty of at least as many good results for the 81 of which I have not been able to get notes after the first twelve months, as for the 107 in which I have done so. Under the age of twenty-one years the results in known cases are much more satisfactory. But of dry statistics you will think that I have given you, perhaps, more than enough.

“The determination of the question as to whether the operation for the radical cure is an appropriate alternative to a life-long wearing of a truss, and a valuable supplement to the slow and very uncertain cure by truss pressure, will continue to depend on the age, habits, circumstances, mode of life, and, to some extent, the cruel experience of trusses and wish of the patient after having the matter fairly put before him, and, perhaps nearly as much, upon the anatomical knowledge, skill, energy, and experience of the surgeon, or his disposition to that finality frame of mind to which I have alluded. In any case, whether universally or only occasionally resorted to, it forms, I think, a valuable addition to the resources of surgery.—*Brit. Med. Journ.*, Aug. 9, 1873.

44. *Case of Retention, followed by Suppression of Urine, lasting seven days; Recovery.*—Dr. S. T. KNAGGS relates (*Dublin Journ. Med. Sci.*, July, 1873) a case of this and remarks: “This case is remarkable, from the fact that the patient, a broken-down, debilitated subject, survived seven days without passing a drop of water from his urinary bladder, and ultimately recovered. It possesses a further interest, from the fact that nature came to the rescue of the physician, and indicated a rational procedure in the treatment. The gastrointestinal tract and the skin took on vicarious action, as was indicated by the copious watery vomitings and profuse perspirations exhaling a peculiar urinous odour. These organs (stomach, intestines, and skin) voluntarily gave their assistance to the kidneys, and performed their functions, while their (the kidneys’) portals were stopped, and thus relieved the blood of urea and such effete products as would have accumulated in the system, and have literally poisoned the patient.

45. *Onychia Maligna.*—In our number for April last, page 551, we noticed the successful treatment of this disease by Prof. Vanzetti by the local application of nitrate of lead. Dr. WM. MACCORMAC, in a paper read before the Surgical Section, British Medical Association, fully confirmed the efficacy of this treatment. Dr. M. stated the disease was very common in Belfast, affecting principally the girls employed in flax-spinning mills. During the ten years from June, 1863,

to June, 1873, there were 217 cases of this malady among the patients of the Belfast General Hospital, being 2.2 per cent. of the total surgical out-patient cases; 115 occurred in girls between the ages of ten and fifteen, and 63 between the ages of fifteen and twenty. One hundred and eighty-four were mill-workers. Dr. M. had had no opportunity of trying Dr. V.'s treatment, but at his (Dr. M.'s) suggestion, it had been used by Dr. Scott in fifteen cases in the Belfast Hospital, with most satisfactory results. According to Dr. Scott, from fourteen days to a month were sufficient for a complete cure. All pain ceased from one to three days after the first application; and the swollen irritable margin of the ulcer gradually disappeared, leaving a healthy granulating sore. —*Brit. Med. Journ.*, Aug. 30, 1873.

OPHTHALMOLOGY.

46. *Pigmentary Disease of the Eye*.—Dr. HIRSCHLER calls attention (*Archiv für Ophth.*, vol. xviii.) to a peculiar kind of pigment deposit which he has met with in the cornea.

Pigmentary deposits in the proper substance of the cornea occur, as a rule, in connection with scars, a portion of the iris being entangled in the cornea; but he refers only to pigment formed on the spot, not to pigment which has wandered into the cornea from elsewhere. The existence of black pigment has been repeatedly demonstrated microscopically in the cornea, as a result of the degeneration of hæmatin in cases of superficial or parenchymatous keratitis; but the occurrence of pigment in such quantity as to be visible to the naked eye, after the subsidence of inflammation, has hitherto almost escaped attention.

Dr. Hirschler's attention was first attracted by dark spots, which he noticed to appear in the cornea during the retrogression of diffuse parenchymatous keratitis, and which he regarded as mere transparent portions—circumscribed gaps in the parenchymatous cloudiness. Later observations induced him to look on them as accumulations of pigment in the deeper layers, masked by the more superficial haze. As he has now observed this in two cases, that is, in three eyes, he thinks that probably the occurrence is more common than the silence of authors on the subject would lead one to expect.

These pigment deposits are met with during the period of absorption in cases of diffuse parenchymatous keratitis, and appear, in conjunction with commencing clearing up of the general haze, at those parts which are indicated by the presence of more numerous and larger newly formed vessels, and therefore more abundantly on parts near the centre of the cornea. Irregularly margined spots or disks, with four or more angles, are formed of the size of small pins' heads, or 2 millimetres (.08 inch) in diameter; or sometimes the spots may be quite circular. The colour is of a deep black, but when looked at from the front the deposits appear less deeply coloured, owing to the haze through which they are seen. If the latter be absent, then the black spots can scarcely escape observation in moderately clear daylight. By focal illumination under all circumstances they can be more closely examined. They are then seen to be situated about midway between the anterior and posterior surfaces of the cornea. When the infiltration of the cornea has become reabsorbed, these pigment-deposits become so apparent, that they may look like bits of coal-dust on the cornea. Under a magnifying power of 20 diameters, the deposits appear made up of a collection of several smaller spots. The centre of the spot is sometimes of a deep black, surrounded by a rusty-brown or deep-red circle; sometimes it is less deeply coloured than the periphery, and is then of a rusty-brown colour, making the whole spot resemble an irregular ring. In one spot, at a somewhat higher level, a deep-red border could be distinguished, but whether this was due to an effusion of blood or to a loop of vessels could not be determined.

Dr. Hirschler considers that there can be no doubt that this deposit of pigment originates from altered hæmatin, and consequently from antecedent effusion of blood into the parenchyma of the cornea. Additional evidence in favour of this was afforded by the presence of newly formed vessels.

Illustrations are given of the appearances of the deposits, and references are made to authorities on the deposit of blood-pigment.

Dr. Hirschler thinks that the long duration of the parenchymatous inflammation is of importance in reference to the production of these deposits. He describes two cases in great detail; but, before doing so, he remarks that, though differing in the mode of their appearance and in their course, the two agreed with the typical examples of the affection in question, inasmuch as, in both, the disease began at the periphery and extended over the whole cornea, and deprived this for a long time of its transparency; that in both a rich vascularity appeared; and that, finally, the duration was very protracted. In both cases there was slight iritis, not producing marked adhesions, but causing an advance of uveal pigment beyond the pupillary margin. In one case a rather considerable corneal staphyloma resulted, in both eyes, from the keratitis. In both cases Pagenstecher's salve was used for more than a year; and he calls attention to the fact that the pigmentation was first noticed after this remedy had been used for some time.

The first patient was a man, aged 24. He had diffuse parenchymatous keratitis, serous iritis, and pigmentary deposits in both eyes.

The second patient was a married woman, aged 29, who had parenchymatous keratitis, episcleritis, iritis in each eye, and pigmentary deposits in the left eye.

In conclusion, the author also calls attention to the complication of the keratitis with recurrent episcleritis, which was met with in the second case. He thinks it deserves more attention than is generally given to it. Dr. Schiess-Gemusens has written to the same effect (*Kl. Monatsbl.* 1871).

Dr. C. RITTER says (*Monatsblatt für Augenheilkunde*, Oct. 1872) that authors are almost wholly silent on the share which the pigment-layer takes in the inflammatory process. In most forms of iritis, the pigment-layer certainly appears to participate in a very slight degree, or not at all; but in certain cases the pigment-cells appear to take the principal part.

He narrates the case of a woman, aged 52, whose right eye had been defective after a blow three years previously. She could count fingers at the distance of a few feet.

The cornea was diffusely opaque in a moderate degree. Behind the cloudy layers, two completely black points could be seen in the layers immediately adjoining Descemet's membrane. One of them was somewhat further from the membrane than the other. Both were at the lower part of the cornea. The size of the two was not alike; the larger had a diameter of about a millimetre (.04 inch). The intensity of the colour was extreme. The deep black paled but slightly at the margin; slight alterations in the tint were manifest also in the centre of the deposits. The vascularity around the cornea was slight; in the cornea itself there were no vessels to be seen. The aqueous humour was not altered, and the colour of the iris was normal. The margin of the pupil was everywhere, however, united to the lens by dense adhesions which were covered with very black pigment. After atropia, the adhesions were more marked; the pupil dilated outwards, and the blue iris-substance was drawn away from the adhesions all round. The adhesions were continuous with the pigment of the iris, and were covered with black pigment, if not made up entirely of pigment-cells. Manifestly the proper structure of the iris was but little affected. The disease originated, at least in great part, in the pigment-layer. The left eye was quite healthy.

Treatment could not be expected to be of much use, as the disease was of long standing, and the patient only attended for a short time.

The author cannot entertain the slightest doubt that the case should be regarded as one of iritis originating in the pigment-layer with secondary corneal mischief. The latter was wholly insignificant, the superficial layers were quite free, and there was not the slightest inequality of the epithelium. The deeper

layers were, it is true, diffusedly cloudy, but nowhere with any degree of intensity.

The two pigment-deposits, just in front of Descemet's membrane, could, without any difficulty, have become detached from the pigment-layer of the iris and have penetrated through Descemet's membrane. The complete resemblance in colour to that of the iris-pigment would confirm the supposition that this was what had occurred. The morbid change in the cornea is explained, partly as a secondary disturbance of nutrition in consequence of the iritis, partly as a deposition from the iris.

How it happens that this form of iritis has not hitherto been specially described, is incomprehensible. The author has not himself before observed it, at any rate so distinctly, but he may have overlooked cases, and his material for observation is not so abundant as is the case in some large cities. He cannot help suspecting that such cases have escaped notice.

He thinks it worth while to give a special name to the disease, and designates it "Iritis pigmentosa;" with more justice, in his opinion, than can be assigned to the name "Retinitis pigmentosa." He cannot, from one case, lay down any rules for treatment or for prognosis.

He protests against Hirschler's view that the pigmentary deposits in the tissue of the cornea in his cases were due to degeneration of hæmatin. Ritter says that the remains of hæmatin would never be of a "deep black," like "coal-dust," but of a reddish-brown colour. He thinks this is sufficient to upset Hirschler's view. He thinks the cases agree with his own, except in reference to the severe corneal affection present in Hirschler's cases. Ritter quotes statements from the narratives of the cases, showing that the iris was affected in each, much as in his own case.

He thinks that the transference of pigment from the iris in the cornea is not at variance with former experience, and that modern researches on wandering cells have removed any appearance of strangeness from his theory.—*London Med. Record*, Aug. 13, 1873.

47. *Inflammation of the Cornea in Affections of the Trigeminus*.—Prof. EBERTH, of Zurich, proposes a new explanation of the occurrence of keratitis after section, injury, or disease of the fifth cranial nerve. This pathologist, whose observations and opinions are worthy of the greatest respect, has for some time maintained that the severity of the process in traumatic keratitis depends upon the conveyance of bacteria into the cornea by the foreign body, and not upon the trauma directly. He now describes (*Centralblatt*, July 19, 1873, No. 32) the occurrence of a similar keratitis without any external wound whatever—by the settlement of the organisms in the cornea after section of the trigeminus. The exophthalmos, loss of sensibility, diminished nictitation, and the desiccation of the exposed corneal surface lead on to inflammation, with the production of bacteric masses indistinguishable by the microscope from the condition in diphtheritic keratitis. The most superficial puncture of the affected spot causes a rapid extension of the disease. The second element, therefore, which has not been previously recognized in the etiology of keratitis after injury of the fifth nerve—but which, according to Eberth, is essential—is the presence of bacteria in the atmosphere. Both the condition of the globe after the section or disease of the nerve, and the condition of the atmosphere, will of course vary in different cases. The occurrence of the keratitis will therefore be influenced by the degree and extent of the desiccation, the amount of protrusion, and the size of the ocular aperture. And, on the other hand, the quantity of bacteria in the air and the presence of epithelial abrasions will determine the severity, rapidity, and extent of the inflammatory destruction.—*Med. Times and Gaz.*, Aug. 23, 1873.

48. *Intermittent Neuralgic Vesicular Keratitis depending upon Traumatic Causes*.—Dr. EDWARD HAUSEN has published in the *Hospitals-Tidende* a paper on this affection, which he says has not been hitherto noticed. It takes its origin in a direct traumatic action on the terminal nerve-fibres, probably those of the corneal epithelium which, doubtless, exercise an important control over

the vitality of the epithelial cell. So pronounced are the neuralgic phenomena attending this affection that it might, perhaps with propriety, be called "neuralgia of the cornea" rather than "keratitis." The origin of the malady is always a wound in the shape of a scraping of the epithelium caused either by a needle or a twig, or some such thing. In from eight to fourteen days suddenly and generally by night, violent pains set in in the eye, shooting outwards in all directions from it, and accompanied by profuse lachrymation and photophobia. Treatment consists in dropping in a solution of atropia, warm fomentations, and, perhaps, quinia and bromide of potassium internally.—Dr. J. W. Moore's *Report on Scandinavian Medicine in Brit. and For. Med. Chir. Rev.*, July, 1873.

[We have seen several cases of this persistent and troublesome affection. In most instances it was brought on by a scratch from the finger-nail of infants, and the subjects of it were nursing mothers. In one case it was produced in a young lady by a wound inflicted accidentally by the finger-nail of a girl. The affection is apt to recur at intervals for a considerable period.]

MIDWIFERY AND GYNÆCOLOGY.

49. *Diagnosis of Early Pregnancy.*—Dr. ADOLPH RASCH, in a paper read before the Obstetrical Section Brit. Med. Association, stated that he wished to draw attention to an important symptom of pregnancy of the first three months, of which until now no notice has been taken by French, English, and German authors. After briefly reviewing the early symptoms as taught in hand-books, including the symptom on which Dr. Barnes laid stress before this Association, Dr. Rasch said that no opinion should be expressed in any case unless the uterus had been made out beyond doubt by the bimanual examination. The vaginal examination should always be made by *two* fingers, unless circumstances forbade it, as by so doing results much more accurate could be obtained. An enlargement found, the distinction had to be made between enlargement by hypertrophy, or by tumours, and enlargement by pregnancy. To solve this difficulty, the author has continued his investigation in a very large number of cases of which he kept notes for nearly ten years, and enlarged experience has fully borne out what had helped him in making a few times a right diagnosis where better men had failed. This important symptom was fluctuation. That it must be felt very early seemed to him, *à priori*, certain. For why should half an ounce or more of liquor amnii, inclosed under conditions very favourable for this purpose, not be felt fluctuating equally well as a few drops of pus in a panaritium? The notes of several hundred cases satisfactorily answer this question. Fluctuation could be felt in some cases as early as the seventh week of pregnancy; in most cases after the second month. With every following year the author had less difficulty in detecting this very important symptom. By adding to it the areolar signs of the mammæ, we should be able in many cases to make an almost certain diagnosis. The author here mentioned another valuable symptom in early pregnancy which often directed attention to pregnancy, viz., the increased desire to pass urine, especially at night. It certainly ought to put the practitioner on his guard, and make him eschew the use of that valuable instrument for confirming a diagnosis already made—the uterine sound—which, in fact, should never be used by those that could not dispense with it in making a diagnosis. The objection to fluctuation as a symptom of pregnancy might be that it could not be felt, or if felt, might be due to retention of other fluid than liquor amnii. Considering the great rarity of retained menses or other discharges, the mistakes would be rare, even if other symptoms did not help us to make a distinction. But it would certainly be safer practice for a short time to suspect pregnancy, where it did not exist, than to do the reverse. To meet the other objection that fluctuation could not be felt so early, Dr. Rasch urged his hearers to try patiently, and

their assiduity would be rewarded. The best way to feel it was to introduce two fingers into the vagina, while the other hand steadied the womb through the abdominal walls, and alternately to manipulate the uterus with the two fingers. In some part of the uterus the fluctuation would be found often in one corner of the fundus, sometimes lower down. In most cases of early pregnancy, the author found the uterus anteverted, and then the manipulation was easier done than when the womb was retroverted. The fluctuation was in the beginning mostly only felt by the fingers in the vagina, sometimes, too, by the outer hand at the same time. After three months, it would be mostly felt by outward manipulation alone, but we should never trust to that only. The catheter should always be introduced when accurate results were desired.—*Brit. Med. Journ.*, Aug. 30, 1873.

50. *Uterus in Pregnancy*.—The anatomy of the gravid uterus and the foetal envelopes has been recently investigated afresh by Dr. KUNDRAT, of Vienna. The account furnished by the author in his paper (*Medizinische Jahrbücher*, 1873, No. 2) is partly confirmatory of the accepted description of these structures, and partly the opposite: in either case it deserves careful attention. The following points, which are the most generally interesting, refer to the human uterus and embryo:—

The mucous membrane of the newly impregnated uterus is known as the decidua, and is familiarly divided into the decidua vera, reflexa, and serotina. In structure it at first somewhat resembles the uterine mucosa, in or before menstruation; it is thickened, the glands are dilated, elongated, and tortuous, and there is a great increase of intertubular cells. In all respects the structure of the three portions of the decidua is very similar. Inferiorly the vera suddenly ceases at a short distance from the cervix in an overhanging border, and the cervix takes no part in the formation of the foetal cavity. Both the Fallopian tubes and their inferior openings are patent during the whole period of pregnancy. When the impregnated ovum reaches the inferior tubal opening its progress, according to Kundrat, is not obstructed by an adhesive growth of the opposite mucous surfaces to each other, as some observers believe, for no such adhesion exists. For the same reason the ovum does not push before it and invaginate a portion of the mucosa, which becomes the decidua reflexa. The latter is clearly an outgrown and infolded portion of the decidua vera; for it possesses glands on its deep or ovular, as well as on its free, surface. The ovum is retained at the fundus of the uterus by the swollen decidua. If the swelling is not so great, the ovum may travel down towards the cervix; and it is for this reason that placenta prævia is more common in multiparæ. Kundrat does not believe that the ovum enters the mouth of a gland, but that it develops on the irregular surface of the serotina. As pregnancy advances the uterus enlarges, and the connection between it and the ovum becomes more intimate and complex. The enlargement of the uterus is at first out of proportion to the growth of the embryo, and a free cavity exists between the vera and the reflexa which is filled with a somewhat opaque mucoid fluid. It is not till the fourth month that the embryo fills the uterine cavity, and the walls, which were previously disproportionately thick, become disproportionately thin, while the envelopes become transparent. In the fifth month the process has advanced yet another step, by the adhesion—partial at least—of the opposite walls of the uterine cavity; that is, of the decidua vera and the decidua reflexa.

In regard to the connection between the chorion and the decidua, it has often been represented that the processes or villi of the former pass into the glands of the latter. Kundrat maintains that this arrangement was “but seldom” to be discovered. On the contrary, the chorion-villi were found to be fixed in the grooves of the serotina and on the sides of its elevations by a connective mass composed of mucus and degenerated epithelium. Other villi had buried themselves in the tissue of the serotina, and formed a connection so intimate that any attempt at separation ended in rupture. It is here that the placenta is afterwards developed. As gestation proceeds the changes on the decidua are very considerable, and in the last months peculiarly interesting.

The decidua reflexa becomes attenuated by pressure until reduced to a simple layer of the transparent envelopes of the embryo, of which it forms the most external portion. The decidua vera and decidua serotina, on the other hand, remain as comparatively thick layers of tissue, compact on the surface and cellular, but spongy in their deep portion, from the presence of the numerous ends of the dilated glands, which represent sinuses lined by epithelium. As the termination of pregnancy approaches there occurs, as we have said, a remarkable change on the lining membranes of the uterus. These and also the reflexa become whitish, dull, and of a pale yellowish or even yellowish-gray tint, opacity replaces transparency, and the process, which is discovered by the microscope to be one of fatty degeneration, passes into the deeper layers. This description of course reminds us of the simultaneous fatty degeneration of the placenta. When parturition occurs a portion of the membranes is expelled with the fœtus, and it is interesting to inquire what part, if any, of the envelopes is retained. Careful examination certainly reveals that the superficial portion of the decidua vera is as a rule included in the fœtal membranes, while the deeper portion is retained, although this is not always the case. During the first week post-partum the discoloured lining membrane of the uterus may be found microscopically to present the characters of the decidua vera, but the sinuses are full of blood, the superficial cellular layer gone, the fatty degeneration extends to the deepest layers, and the tissue generally is infiltrated with round cells and blood. The lochial discharge consists of such cells and of products of disintegration. In the second week post-partum the process has still further advanced, and the epithelium of the exposed sinuses is found to be proliferating. Restitution now begins and advances, and soon there is found on the surface of the muscular coat a fine layer of connective tissue, covered by epithelium and furnished with young glands, to represent the mucosa of the uterus, which is again at rest.—*Medical Times and Gazette*, August 16, 1873.

51. *Tedious Labour from Debility and its Treatment*.—Dr. HUGH MILLER, of Glasgow, in a paper read before the Obstetrical Section, British Med. Assoc., made some remarks having reference solely to cases in which delay was due to enfeeblement or failure of the natural powers of the organs specially called into action during parturition. The writer held that the element of time should not be considered in the classification of labours, that it was unscientific to do so, and that uncomplicated labours should only be assumed to be unnatural when the pains were no longer active, and the labour non-progressive. After considering the powers of expulsion in a healthy woman, the author referred to the forces at work which prevented a high standard of health from being maintained in city life, and said that, in proportion as it was wanting, labour was prolonged in many cases. Labour in cities was thus frequently tedious from constitutional debility, so that, even while it might be regular and its progress certain for a time, the pains either lingered or became arrested through exhaustion taking place before the labour was completed. When symptoms of acute fatigue set in the pains were short and sharp, and they recurred more frequently. The general indications for treatment were to support the strength before labour set in, and during the first stage, and as soon as the pains indicated debility, to deliver with the forceps. The timely application of the forceps was preferred to ergot, because it seemed more reasonable to assist a weakened organ by giving help from without, than by applying a stimulant to an already overworked one. This practice, instead of inducing flooding, helped to prevent it, through preserving the power of the uterus from becoming exhausted; it also prevented inflammatory diseases of the passages, and the death of the fœtus. In his private practice, he found one case in every twenty-six labours show symptoms of debility; and since he had adopted the early application of the forceps, not one of the children so delivered were stillborn.—*Brit. Med. Journal*, Aug. 30, 1873.

52. *Death from Puerperal Eclampsia; Cæsarean Section; Extraction of Living Child*.—M. MARCÉ, interne, reports (*Le Progrès Médical*, June 14, 1873) an interesting case of this which was treated in L'Hôpital la Pitié, under the

care of Dr. Lorain. The patient was 35 years old, and in her eighth pregnancy. She suffered from puerperal uræmic eclampsia of an epileptiform character. The fatal result being undoubted, the patient was carefully watched, and every preparation made for the operation. The moment after she drew her last breath, the abdomen was opened, and an infant at full term extracted. The child was not cyanosed, but did not respire at first; but after tickling in the mouth and slapping with wet cloths, in a minute it began to respire, and regular respiration was soon established.

53. *The Value of the Corpus Luteum as a Proof of Impregnation.*—Dr. Wm. T. BENHAM records (*Edin. Med. Journ.*, August, 1873) the following highly interesting case. The subject was a female, æt. 29, who it was impossible could have had sexual connection with any one for at least several years before her death, was admitted into the Bristol Lunatic Asylum in December, 1864, suffering from epilepsy. She died on the 26th March, 1873. On examination the organs of generation externally “presented in a marked degree all the highly characteristic signs of virginity. On removing the uterus, ovaries, and Fallopian tubes, they were found to be in a state of intense congestion, the superficial veins standing prominently out, and being filled with dark-coloured blood. The left ovary was more congested than the right, and on its upper anterior surface, situated rather more internally than externally, was seen a bean-like prominence, surrounded by a plexus of bloodvessels all the more apparent from their congested condition; it was of a polished appearance, and of rather a bluish shade of colour. On examining this body it was noticed that its upper surface presented a small nipple-like projection, apparently formed by the distension of a small portion of the peritoneal covering of the ovary, and containing some soft distending material; some small bloodvessels could be observed ramifying round the base of it. At the centre of this prominence was a small irregular dark spot as if a small orifice had existed there, and had been closed up by a clot of blood. On making an incision through its long diameter, there was at once seen an oval-shaped cavity filled by a mass of partially decolourized fibrin, and entirely surrounded—except at the point corresponding to the nipple-like process—with a thick yellow substance of considerable firmness, pierced by a number of small bloodvessels which sprang from the vascular plexus surrounding it externally; and on using a magnifying-glass of low power, these minute vessels could be seen traversing its substance, and losing themselves on its inner edge, which was contiguous to the surface of the partially decolourized fibrinous clot filling up the cavity. On measuring this cavity it was found to be five-eighths of an inch in its long, and three-eighths of an inch in its short, diameter. The yellow substance surrounding it was found to be of the uniform thickness of one-eighth of an inch, the whole structure measuring seven-eighths of an inch in its long, and five-eighths of an inch in its short, diameter. On again examining this yellow substance, it was seen to be of a firm granular-like matter, with many minute oil-globules scattered over its surface; and in parts where the bloodvessels were the most numerous they gave it a pinkish-yellow appearance. It will be at once seen that we have here occurring in the virgin ovary a corpus luteum, possessing such decided characteristics as to make it *per se* quite indistinguishable from the so-called *true* corpus luteum of impregnation of the same period, asserted by many writers—Paterson, Lee, Montgomery, Bernard, Deschamps, Müller, Ramsbotham, and others—never to occur but in the ovary of an impregnated female, and consequently regarded by them as infallible proof of a recent pregnancy.

“Hoping almost against hope that the ovule, which had evidently been only very recently extruded, might still be found in the cavity of the uterus, a section was made through its anterior wall, and on laying it open, there was seen a small circular body, of a reddish-white colour, almost buried in the pulpy purplish-coloured decidual debris, which thickly covered the whole of the interior surface of the uterus. On carefully removing what I could of this decidual matter from its surface, and examining it with an inch lens, it appeared to be more of a pinky-white colour, and having a fine velvety surface, which, under a higher magnifying power, was seen to consist of multitudes of white filaments. It mea-

sured, with the decidual matter surrounding it, and which could not be entirely separated from it, one-twentieth of an inch in diameter, and was situated a little more than seven-twelfths of an inch above the os internum, and slightly to the right side of the median raphe of the uterus. As I have already said, under a higher power its surface was seen to be composed of very short white filaments, which gave it much the appearance, only on a smaller scale, of one of the earliest impregnated ova on record, discovered and described by Velpeau as measuring about five-twelfths of an inch in diameter, and the filaments of which were so far developed as to measure one-twelfth of an inch in length. This ovum he stated to be fourteen days old.

"On making a section through this ovule, with the object of examining it more minutely, I noticed that a very small quantity of albuminous fluid escaped from it, and it lost its globular form directly. A partially collapsed cavity of very minute size was seen to occupy its centre, and although I carefully examined the incised ovule and the fluid which had escaped from it, I could discern nothing more of importance."

This case proves "that an unimpregnated ovule can and has descended into the cavity of the uterus, and remained there for some days without being, as stated by some, immediately washed away with the menstrual fluid, or without, as stated by others, having undergone such rapid dissolution as to have immediately passed away; and, what has been denied by many, that an ovule is ever impregnated in the cavity of the uterus itself, is now made extremely probable. There can, I think, be no doubt that, had this girl had sexual connection, this ovule might certainly have become a fecundated ovum; unless, indeed, what has never yet been demonstrated is the case, that the menstrual fluid, through which the spermatozoa would have to pass to reach the ovule, possesses the power of destroying those bodies immediately on coming into contact with them. Before passing from this subject, let me state that I think this individual case goes a long way to make it probable that where an ovule is extruded it takes place at the commencement of menstruation more frequently than at any other time. This ovule had evidently been extruded for some time—that is, not less than two days; and that it had not been extruded immediately before death is evident from the fact of its having been found in the cavity of the uterus, embedded in the decidual debris. It must, therefore, have taken some time to have been conveyed there, considering the distance it had to travel; and, besides, the condition of the fibrinous clot filling the cavity it left makes it certain that it had been extruded at least two days previously. It appears, then, that in this case the ovum was extruded at the commencement of menstruation, and that it is usually so in other cases seems, I think, to be indicated by this, that at the time of, and for a day or two previously to, menstruation, a much greater supply of blood flows to the ovaries than at any other period; and the fact of the distended Graafian vesicle sharing in the increased vascularity of the whole structure at that particular time, makes it extremely probable that the extra pressure then put upon the captive ovule should be sufficient to cause it to burst its coverings and to become extruded, and should it not be sufficiently developed to do so at that period, in all probability it would not become extruded until the ovary should be again the subject of increased vascularity; and this seems to show the reason why a menstrual period often passes without the extrusion of an ovule at that particular time. It would appear, then, that the increased vascularity which takes place at the menstrual period goes a long way to explain the mechanism by which an ovule is extruded more frequently at that than at any other time; also there can be no doubt that the increased vascularity is of great importance in producing those changes in the Fallopian tubes and their fimbriated extremities, which result in those parts of the sexual apparatus taking on the turgid and erectile character necessary for the due performance of the function of grasping the extruded ovule and of conveying it to the cavity of the uterus. But where, in cases by no means uncommon, an ovule is extruded and becomes impregnated at an *inter-menstrual* period, I am bound to believe, from instances which have come under my own observation, that it is owing to the fact that, from some exciting cause more or less potent, the ovaries have taken on an increased vascularity of action resembling that incident

to menstruation, and sufficient to extrude a well-developed ovum at an abnormal time."

Bischoff, Casper, and Kirkes believed that the so-called true corpora lutea may be produced independently of impregnation, and that they consequently cannot be received as proofs of pregnancy. That they are right in this conclusion this case materially helps to prove. The fact of a corpus luteum of menstruation having been found to so exactly imitate those of impregnation, if, indeed, this was only a *solitary* instance, must considerably weaken the theory still held by many, that a so-called true corpus luteum is a sure sign of impregnation. When we come to consider why impregnation should make such a vast difference in the appearance and structure of the corpus luteum resulting therefrom—as is said to be the case—it is by no means easy to see the reason why such should be so.

Dr. Benham believes "that the presence of a so-called true corpus luteum, of at all recent formation, in the ovary of a female, has not the slightest legal value whatever in determining the question as to whether impregnation has taken place or not. If that is proved, as I believe it is, by the facts I have brought forward, it should be of considerable importance in its medico-legal as well as in its anatomical and physiological bearings, for in one case at least recorded by Dr. Guy, the existence of a corpus luteum was held to *prove* that conception had taken place, when the uterus itself presented not the slightest signs of such having been the case."

54. *Duration of Menstruation.*—Dr. COHNSTEIN gives the results obtained from careful inquiry of four hundred women, in whom the menopause had occurred several years previously. 1. The average duration of menstruation was thirty-one years. 2. The menopause occurred gradually in 76 per cent., suddenly in 24 per cent. 3. It occurred in those who had menstruated early (under 13 years) about three years later than in those in whom the catamenia appeared late (after the 17th year of age). 4. The regularity or irregularity of menstruation appears to have no influence on its duration. 5. More married women than unmarried obtain a menstruation period of 29–34 years. 6. Pluriparae show the highest percentage of duration of menstruation for 29–32 years. If their last confinement take place between the ages of 38 and 42, the duration of activity of the uterus varies between twenty-four and thirty-three years; if it occur between the ages of 30 and 38, the duration of menstruation varies between twenty-five and twenty-eight years. Abortion hastens the appearance of the menopause. 7. Lactation increases the duration of menstruation. To sum up, the catamenial function is of longest duration in women who menstruate early, are married, have more than three children, nurse their children themselves, and cease child-bearing between the ages of 38 and 42.—*Brit. Med. Journ.*, May 31, 1873, from *Deutsche Klinik*, No. 3, 1873.

55. *Dysmenorrhœa.*—Dr. GEO. H. KIDD, in his address to the Obstetric Section of the British Medical Association at its late meeting, calls attention to the occurrence of two forms of dysmenorrhœa, one arising from obstruction, the other caused by subacute ovaritis.

"That dysmenorrhœa, dependent on an obstruction to the exit of the menstrual fluid from the uterus," he remarks, "is of frequent occurrence, no physician of practical experience can doubt. Moreover, that, when it does occur, it can only be relieved by treatment directed to the uterus, and of such a nature as will remove the impediment, is a matter of every-day experience, and cannot be questioned; but, when we find it asserted that, without obstruction, there cannot be dysmenorrhœa, or that obstruction is the essential cause of the disease, and that it can only be cured by removing this obstruction, then we are bound to inquire whether clinical experience will confirm the statement, or prove that it is one founded on a too limited sphere of observation. I shall ask you, then, to allow me to trace, in rapid outlines, the clinical history of dysmenorrhœa, and to inquire into the varying nature of the symptoms we meet with. In the first place, I shall speak of cases in which the pain is, beyond a

doubt, due to some cause preventing the escape of the menstrual fluid from the uterus.

"The typical and most simple form of this class of cases is when the obstruction is produced by a small os uteri and narrow cervix. In a typical case of this kind, the condition of the os is a malformation, and is congenital; but it may also be an acquired condition, and is then the result of the contraction either of a cicatrix or of effused lymph. The impediment may, however, and often does, depend on other causes, such as a flexion, and then the symptoms may manifest themselves from the beginning of menstrual life, or not till a later period. A polypus, especially if so situated as to cause a valve-like obstruction, as in one of Marion Sims's cases, or the growth of a fibrous tumour, or some forms of inflammation, may also give rise to obstruction and dysmenorrhœa as an acquired disease.

"The pain in dysmenorrhœa, depending on obstruction, commences either when the discharge is beginning to flow, or some time afterwards. Patients frequently say it begins some hours before the discharge; but, if an examination be made with the speculum when the pain begins, it will be found that the discharge is actually exuding from the uterus, though not in sufficient quantity to make its way out of the vulva and attract the patient's attention. When the obstruction is not very great, and the discharge scanty, the pain may not occur for some hours, until, in fact, the discharge becomes so copious that it cannot escape through the narrow os.

"The pain is paroxysmal in its character, and seems to depend on the efforts of the uterus to expel its contents. As soon as these efforts have so far overcome the obstruction as to allow the free escape of the discharge, the pain ceases. During the interval of menstruation, there is freedom from pain, and the general health may be unimpaired, but the same cause that hinders the exit of fluid from the uterus prevents, in general, the entrance of semen into it, and the result is sterility.

"On examination, the impediment, its position, and true nature, can be ascertained, and, in the majority of cases, it can be removed by means adapted to the circumstances of the case.

"I have thus sketched the history of dysmenorrhœa caused by obstruction to the exit of the menstrual fluid, chiefly from the facts recorded in my own case-books. From the same source, I have now to describe another form of the disease, one in which the symptoms are so different, that it is impossible they can depend on the same condition. In these cases the disease, instead of being usually congenital, is always acquired. It may be in early girlhood, or it may be after having given birth to several children. In one case, the patient had been married eighteen years and had no family. 'While at school, through neglect,' she said, 'uterine disorder commenced, and has continued without intermission ever since.' In another case, the patient had been married six years; she had had two children, the youngest nearly four years old. She had not nursed either. She had never recovered thoroughly after the birth of her last child, but it was only within the last year menstruation became painful. In another, the disease set in after the birth of the third child. The patient became pregnant a fourth time, and nursed this child three months; but she was in bad health all the time of her pregnancy and while nursing. When menstruation returned, after weaning the child, it was as painful as ever. In many cases, the disease supervenes on the mechanical dysmenorrhœa, but the symptoms are so different, that the patient can herself tell when this took place.

"In the former group of cases, the pain commences simultaneously with the discharge or after it has appeared. In this the pain begins a week or ten days, or more, before menstruation, and at the same time that the pains occur in the pelvic region the breasts become painful, hot, swelled, and tender to the touch. The pelvic pains are spoken of as dull, achy pains; they are felt in the pelvic region, and extend down the thigh to the back. They are not the acute paroxysms of pain of the former cases; they are aggravated when menstruation actually begins, and often continue throughout the whole period, but more frequently are relieved as soon as the discharge is established. They then

cease, and return on, it may be, the fourteenth day; that is, at the middle of the interval. This 'intermediate pain,' as Dr. Priestley calls it, may last only a few days, or it may continue and increase in severity till the next menstruation, the only interval of ease being for the first ten or twelve days after menstruation.

"Menstruation in these cases is often irregular, generally retarded, sometimes it comes too soon, and in some cases a whole month may be passed over, but the pain occurs when the menstruation is due, even though the discharge does not appear.

"The discharge is generally scanty, but sometimes it is excessive. Its appearance is almost always preceded or followed by severe headache, often by vomiting, and, during its flow, palpitation is often complained of, also frequent micturition, and sometimes tenesmus and kneading in the rectum.

"Miss H. states that menstruation has always been painful during the first two or three hours, but for the last two or three years she has suffered very much from pain for a week before menstruation begins, and at the same time her breasts have also become very painful. She has had much palpitation lately, and severe headaches before menstruation begins.

"Mrs. W., married seven years, no children, states that menstruation was always painful at the beginning, but, since marriage, she has suffered for a week before it begins from pain round the sides, stomach, and back, and from pain in her breasts, which become swollen. About five years ago, the os uteri was slit, after which she became pregnant, but aborted at the end of the third month. The painful menstruation continues, notwithstanding the operation and pregnancy. These were cases in which the form of dysmenorrhœa, of which I now speak, supervened on that due to obstruction; on examination, in this latter case, the uterus was found normal in position and size. The os and cervix were quite healthy, but the os was very open in consequence of the operation that had been performed on it. The right ovary, however, was found to be swollen, and very tender to the touch.

"In many cases, in addition to the symptoms already described, there is a constant dull, aching, sickening pain in the back; and there is so much pain, *in coitu*, that all attempts at intercourse have to be given up. Mrs. C. has been married ten years, and has no family. For many years she has had painful menstruation, the pain beginning more than a week beforehand. The os uteri was twice slit, without in any way relieving the pain of menstruation. She has also had the orifice of the vagina dilated, for the pain *in coitu*, but without benefit. On examination, the vagina admitted a full-sized speculum with ease; there was no contraction or spasm at the orifice. The uterus was found with the cervix slit, but otherwise healthy, and the right ovary was found lying in Douglas's space, somewhat enlarged and tender to the touch, the pain, on pressure on it, being of the same character as that caused by intercourse.

"This prolapse of the ovary into Douglas's space was described by the late Dr. Rigby. It is a frequent accompaniment of the form of dysmenorrhœa, now spoken of, and is productive of great pain *in coitu*. If it should be the left ovary that is prolapsed, there is also pain in defecation, and this pain and the pain in intercourse can generally be relieved by the use of the lever pessary of the late Professor Hodge.

"It has been mentioned that, when the menstruation has missed, the pains occur at the time, notwithstanding the non-appearance of the discharge; and it may be further mentioned, that in some cases it continues for a year or more after menstruation has finally ceased.

"When we make an examination in these cases, we may find the os uteri small and contracted; or the uterus bent on itself, or presenting evidences of endometritis; but that these are only complications, is made evident by the fact that in a large proportion of cases we find the uterus normal in position and size, and its tissues perfectly healthy. If we place the patient on her back, with her head and shoulders raised, and her legs well drawn up, and, having introduced the right forefinger into the vagina, make pressure with the left

hand over the hypogastrium, we shall find the ovaries, which in the healthy state can seldom be recognized, one or both of them enlarged and very sensitive to pressure. If one of them should lie in Douglas's space, the true nature of the case will be recognized still more easily, and there will be no hesitation in referring the symptoms to their true pathological cause—subacute inflammation of the ovaries.

"To understand clearly the sequence of the symptoms and their true nature, it is only necessary to bear in mind the function of the ovaries, and their sympathetic relations with other organs, especially the breasts; to remember that the ovaries preside over and initiate the process of menstruation; that, in preparing for this, the Graafian vesicles, originally deeply seated in the substance of the organ, gradually enlarge and approach the surface till they become prominent, and then, rupturing its coats, discharge their contents into the Fallopian tubes, thus constituting the essential part of menstruation. It is not necessary to dwell on the physiology of menstruation on such an occasion as the present; but, if we consider for a moment, as was suggested by Dr. Meigs, the pain and various reflex irritations that so frequently attend the performance of another physiological process—dentition—we will have less difficulty in understanding that pain and various reflex irritations may attend the growth of the Graafian vesicle, its approach to the surface, and its bursting through the coats of the ovary, if this organ be in an unhealthy state.

"In dysmenorrhœa arising from obstruction, we may speak with much confidence on effecting a cure by dividing or dilating the os uteri, or by other appropriate means. In dysmenorrhœa caused by subacute ovaritis, surgical or other treatment directed to the uterus is of no avail, and, indeed, we must be very cautious in promising permanent relief. Leeching, especially at the anus, hot baths, hot syringing, sedatives to the rectum, counter-irritation over the ovaries, the internal use of the bromides, and, above all, rest, and especially physiological rest, will procure relief, and in my hands have often done so after surgical operations have utterly failed."—*British Medical Journal*, August 16, 1873.

56. *Uterine Polypi*.—Dr. T. MORE MADDEN read a paper on this subject, before the Obstetrical Society of Dublin (June 28, 1873), an abstract of which, with the interesting discussion to which it led, we shall place before our readers.

Dr. M. remarked that the subject afforded a striking illustration of the progress of modern obstetric surgery; their diagnosis being now made with certainty, and their removal, with every prospect of success, being now possible by a comparatively rapid, painless, and bloodless operation. The cases of uterine polypi which Dr. Madden had observed were, he stated, divisible into three classes, viz., mucous, fibroid, and cystic polypi. The first, developed from the lining membrane of the uterus, and easily destroyed by torsion or pressure; the second, formed within the pseudo-muscular substance of the uterus, and either sub-mucous, or sub-peritoneal in their origin. The distinction made between intra-uterine tumours and intra-uterine polypi, Dr. More Madden considered unnecessary and untenable. The structure of a so-called fibroid tumour of the uterus is identical with that of a fibroid polypus: either may be encapsuled, and the symptoms of one cannot be distinguished from that of the other. A fibroid polypus is generally but a more advanced stage of a sub-mucous tumour, which, as it grows downwards into the uterine cavity, loses its sessile character, and becomes pyriform and constricted, or pedunculated, by its own weight, at its point of projection from the uterine wall. As to the age at which uterine polypi are most frequent, Dr. More Madden gave a table of fourteen cases, by which it appeared that the larger number of cases were observed about the period of the approach of the "change of life." The symptoms in these cases were menorrhagia or metrorrhagia, profuse or offensive leucorrhœal discharge, and uterine pain, varying, in different cases, from the slightest possible degree of local soreness to the most intense uterine colic. These symptoms, although also applicable to other uterine diseases, were, how-

ever, of importance as indicating the necessity for a local examination, by which alone the true nature of the case can be recognized. The treatment of uterine polypi may be divided into the surgical or curative, and the medical or palliative. The former, when applied to intra-uterine polypi, is of comparatively very recent origin. The credit of proposing the dilatation of the os and cervix uteri by sponge tents, for this purpose, is given to the distinguished obstetric surgeon, Sir James Simpson. But Dr. More Madden read an extract from an ancient volume, entitled, "*The Method of Physick*," by Philip Barrough, the 8th edition of which was published in 1639, which showed that the very same mode of effecting the dilatation of the os and cervix uteri was described and practised at least 234 years ago. In the great majority of cases there can be no question that these growths should, if possible, be removed by operation. But it is as unquestionable that in some cases operative interference is not available; in others, the symptoms are hardly sufficiently urgent to demand this; and again, in other cases we cannot induce the patient to submit to an operation. Under such circumstances Dr. More Madden stated that he was convinced that the progress of the disease may sometimes be checked, its symptoms alleviated, and the patient restored to comparative health and comfort, by purely medical treatment. Moreover, in every case of polypoid disease of the uterus, the surgical measures required should be conjoined with appropriate constitutional treatment. The remedies from which Dr. More Madden has seen most benefit in these cases were, the bromides and iodides of ammonia and potash, given in very small doses, and steadily persevered in for a considerable time; or of a weak solution of iodine. These medicines should be conjoined with the topical application of iodine to the tumour; either by Dr. Savage's plan of injecting a small quantity of the tincture into the uterine cavity; or by Dr. More Madden's own method, of dilating the cervical canal, and swabbing out the uterus with a strong solution of iodine dissolved in glycerine. This application must, however, be always made with caution, as, if great care be not taken, it may, as in some cases cited, produce very alarming consequences. Dr. More Madden referred at some length to the curative influence in this disease of some of the iodated and bromated Swiss and German mineral waters, which he had brought under the notice of the Society some months before, in a paper "*On the Constitutional Character and Treatment of the Diseases of Women connected with Chronic Inflammation of the Uterus*," and also in his work on "*The Spas of Germany, Switzerland, France, and Italy*." As some recent writers had very freely borrowed his opinions—the fruit of long personal experience and observation at various spas of the Continent, to which he had been one of the first to call attention in the treatment of uterine complaints—he again reiterated his conviction of the value of some of these waters, and especially of the iodated and bromated springs of Kreuznach and Wildeggen, in the treatment of the disease now under consideration, and referred to cases illustrating this observation. In the treatment of the uterine congestion associated with polypus of the womb, tepid or cool injections, *per vaginam*, are generally most serviceable. The ordinary syringes used for this purpose, as well as that of Dr. Graily Hewitt's, were inconvenient and fatiguing to the patient. Dr. More Madden exhibited an improved syringe which he had had constructed on the principle of the siphon, and had found very useful. The paper concluded with the detail of several cases of polypus of the uterus, specimens of which, removed by Dr. Madden, were exhibited.

Dr. LOMBE ATTHILL considered that the question of the treatment of fibrous tumours of the uterus by medical means, ought never to be entertained if it were possible to remove them by a surgical operation. He believed that it was a more dangerous procedure to frequently dilate the cervix—for the purpose of facilitating the injection of fluids or application of caustics or iodine—than to remove a tumour by operation. Personally, he believed patients were more likely to die from the effects of prolonged manipulation. Two of his patients from whom he had failed to remove tumours, and who had consequently been subjected to rather protracted operative measures, had died; while in other cases in which he had successfully removed the growth, no unfavourable results ensued. If, therefore, medicinal applications are to be made to the uterus, they

should not be done by repeated dilatations of the os and cervix, but through a tube such as that he had just exhibited. He thought that prolonged irrigation of the uterus and vagina with cold fluids, by means of a douche, such as that shown by Dr. Madden, objectionable, having seen a case which very nearly proved fatal, from an acute attack of pelvic cellulitis, ending in the formation of an abscess, in a lady who had used injections of cold water into the vagina for the purpose of checking profuse menstruation. He, therefore, recommended that fluids so employed should be of the same temperature as that of the body.

Dr. KIDD said he had never seen much benefit from the medicinal treatment of fibroid tumours of the uterus. When these tumours set up an inflammatory action, and the surrounding tissues become infiltrated with the products of inflammation, properly directed treatment will cause absorption of these, and so the tumour will appear to be lessened. But he had never seen any case in which the tumour itself had been actually diminished in size. This, he believed, was as true of the waters of Kreuznach as of other forms of treatment. These waters have a very high reputation, and patients suffering from fibrous tumours are constantly sent to Kreuznach. He visited Kreuznach last year, and had a long conversation with Dr. Præger, one of the leading physicians there, and found he held the same opinion as to the benefit to be derived from the use of the waters as he himself did, and which he had already mentioned. Of the various drugs that have been recommended, Dr. Kidd thought the chloride of calcium makes the patients more comfortable than any other, especially when it acts a little on the bowels. Chloride of calcium was first recommended by the late Dr. Rigby, and it is spoken of very favourably by Dr. M'Clintock; but, though it alleviates the sufferings of the patient, he, Dr. Kidd, had never seen any case in which it caused absorption of the tumour. These tumours often become less in size, and sometimes almost quite disappear when menstruation ceases; but this cannot always be waited for, and then surgical treatment, that is the actual removal of the tumour, is the only treatment to be relied on. Unfortunately it is not always possible to accomplish this; if not, the application of nitric acid will often check hemorrhage. Dr. Kidd referred to the position of the tumour in one of Dr. Madden's preparations, and also in Dr. Cranny's. In each, the tumour grew from the posterior wall of the uterus and bulged out the anterior wall. At previous meetings of the Society, he, Dr. Kidd, had alluded to this bulging out of the wall of the uterus opposite to the seat of the tumour. If this be a law, it will prove a matter of great practical value, and enable us to make the diagnosis between a pedunculated intra-uterine, and an interstitial tumour by the sound alone, before proceeding to dilatation. If there be a tumour growing, say from the posterior wall of the uterus, it will cause a bulging forwards of the anterior wall, and the sound can be passed along the side that is bulged out; whereas, if the tumour be an interstitial one, the sound will pass, not along the bulged out wall, but along the opposite one.

Dr. CHURCHILL had never seen medicines nor applications of iodine do any good in the treatment of polypi. He had, however, seen large fibroids enucleate themselves. He thought that the points stated by Dr. Kidd were of extreme value, and likely to prove of great importance. Dr. Churchill then alluded to the curious circumstance (which, he stated, he was unable to explain) that the introduction of even a single tangle tent through the os internum sometimes produced very severe effects. He narrated a case in point, which nearly proved fatal, peri-uterine inflammation having been set up, with the formation of an abscess between the rectum and vagina. He was constantly in the habit of introducing a tent through the os externum and keeping it in the canal, by means of a plug, for twenty-four hours, without the slightest inconvenience or risk; but when once passed beyond the inner os, a region of danger was entered upon.

Dr. MORE MADDEN, in reply, said that he had never meant to put drug treatment in opposition to the surgical treatment of uterine polypi, except in those cases in which an operation is not permitted, or is inapplicable; and in these remedial treatment is oftentimes most serviceable.—*Irish Hospital Gazette*, July 15, 1873.

57. *Chronic Inversion of the Uterus ; Reduction effected by Manipulation.*—Two cases of this were reported to the Dublin Obstetrical Society, June 14, 1873.

The first was reported by Dr. GEO. H. KIDD. The subject of it was a lady who had been confined in August, 1872. When she came under Dr. K.'s care he found a tumour in the vagina which, on careful examination, he found to be an inversion of the uterus. It was almost complete, that is to say, the neck of the tumour was surrounded by a portion of the lip of the uterus, but not more than one-fourth of an inch in depth. A section of the tumour would present an appearance like the diagram which he now exhibited. He had some doubt as to whether he should call it a complete or an incomplete inversion ; but it was as complete as any case he had seen ; there was nothing but a small lip that had not been turned in. The woman was extremely pale and anæmic, and had a countenance expressive of very great suffering. She came into the Coombe Hospital, and after allowing her to remain in bed a few days he tried to reduce the tumour. He put her under the influence of chloroform, and placing her on her back on the table, he introduced his hand completely into the vagina. He grasped the tumour in his hand, and compressed it for a few seconds, so as to empty it completely of blood. He then lengthened his fingers, and grasping the tumour between them and his thumb, and compressing it as much as he could, he gradually pushed it up into its place.

The second case was reported by Dr. G. JOHNSTON, Master of the Rotunda Hospital. The subject of it was æt. 35, married, mother of five children, admitted into Rotunda Hospital 25th of July, 1871, suffering from hemorrhage caused by inversion of the uterus, which took place at her last confinement [Jan. 1, 1871], and as she states, must have occurred at the time of the expulsion of the placenta, as the person in attendance hurt her very much in forcing it off, immediately after which she had great flooding, so much so as to render her quite unconscious. However, she suckled her child for a period of six months, the hemorrhage continuing more or less ever since her confinement, but has diminished since she weaned the baby.

On examination the uterus appeared protruding through the vulva, and on passing the fingers within the vagina about half an inch of the cervix was found uninverted, and could be felt distinctly encircling the tumour, which was five inches in length, with a diameter of nearly three inches.

On the 2d of August, seven months after the accident had taken place, the patient was put under the influence of chloroform, and having been put on her left side in the usual obstetric position, Drs. Denham, M'Clintock, and Atthill assisting, the fingers of the right hand were introduced within the vagina, the inverted mass was grasped firmly at the cervix, and by degrees, and after some difficulty, reduced within the os, and, eventually, the uterus was completely restored to its normal position. There was no hemorrhage during or after the operation, which lasted about twenty minutes, and as soon as she recovered from the anæsthesia she was given a full opiate.

On the 6th she was examined with the sound, when we ascertained it passed into the cavity about $4\frac{1}{4}$ inches. There has been no hemorrhage since ; in fact she convalesced favourably and went home quite well on the 27th.

I have heard within the last three weeks that she continues in excellent health, menstruates regularly every month, and in the normal quantity.—*Dublin Journ. Med. Sci.*, July, 1873.

58. *Amenorrhœa from Congenital Malformation.*—Dr. CHURCHILL read a paper on this subject before the Dublin Obstetrical Society, May 10, 1873. To make an accurate diagnosis was often difficult, and yet the question of relief depended upon this point. The means of forming diagnosis were either physiological, or physical. The first dealt with the presence of the menstrual *molimen* and of sexual gratification, etc. By means of the second, we judged of the presence or absence of the different organs of generation. A most useful method of examination was that termed the *bimanual manipulation*. Dr. Churchill related twelve cases in illustration of his subject, in some of which, the ovaries were either not present, or were in an infantile

state, undeveloped, and not acting; while in others, the fault consisted in the absence of the uterus. or. in congenital closure of the os uteri (one case). As regards treatment, of course in most cases, nothing could be done; but, to remedy an undeveloped state of the uterus, Sir J. Y. Simpson had recommended the use of a galvanic pessary. A practical question was, whether we think that a patient ought to marry, in whom these defects were discovered. However reluctant we should be to condemn her to a single life, it should not be forgotten that another person is concerned in the matter, and therefore the decision against marriage is called for, or, if she be fully bent upon marrying, the other party ought to be fully informed as to the existing defect.—*Brit. Med. Journ.*, August 9, 1873.

59. *Unilateral Development*.—Dr. RINGLAND communicated to the Dublin Obstetrical Society a remarkable case of this in a young lady æt. 20, who had never menstruated naturally, but in whom vicarious discharges at each monthly period had occurred for more than four years, through the bladder, rectum, nose, or eyes. The left side of her body was perfectly developed sexually; while the right was not so. The left breast was normal, the right resembled that of a girl of 12; there was hair on the left side of the pubes, none on the right; the left labium was fully formed, the right was almost wanting. The clitoris, vagina, and uterus were absent. The left ovary could be felt, but the right could not be detected. Sexual desire existed in this case, but a strong opinion as to the inadvisability of marriage was given.—*Ibid.*

60. *Form of the Body in New-born Children*.—PFANKUCH calls in question the statement of Simpson, that male children are more exposed to danger than females during birth, on account of their greater size. He finds that, of children of equal weight, more males die than females; and, with the view of ascertaining whether this was to be accounted for by the size of the head, he has examined the relation between the head and the rest of the body in 714 new-born children. He finds that, towards the end of pregnancy, the increase in weight of the child is relatively more rapid than that of its length or of the size of its head, the body and limbs becoming more developed. For equal weights, boys are longer, and have larger heads than girls. First children are longer and have larger heads than those which follow them.—*Brit. Med. Journ.*, May 31, from *Archiv für Gynæcologie*, vol. iv., part 2.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

61. *Experiments with Snake Poison; Potassa as an Antidote*.—In a letter from Madras in the *Med. Times and Gaz.*, Aug. 23, 1873, the writer relates some experiments he witnessed made by Dr. John Shortt with snake poisons. He states, "We next witnessed a set of experiments to show the effects of liquor potassæ on the snake poison and on the animals poisoned with it. For this purpose a solution was made of four grains of dried cobra poison in half an ounce of distilled water. The dried poison had not lost an atom of its virulence (as we afterwards saw) although it was taken in August, 1870. The solution was slightly opalescent. On adding liquor potassæ to a still further diluted quantity, some striking chemical change evidently took place, for it speedily became of a bluish-black colour—at first slight; afterwards intense, like newly prepared ink.

"Having satisfied us of the reaction between the potassa and the poison, experiments were made on animals. Two dogs injected with the solution of cobra poison into the cellular tissue of the parietes of the chest died in one hour and thirty-five minutes and in two hours and forty-seven minutes respectively; whilst one dog that was injected first with cobra poison, and with diluted liquor potassæ afterwards, survived for four hours and fifty-seven minutes; and a

rabbit that was injected with the dark mixture of cobra poison and liquor potassæ was quite unaffected by the operation. The reader will see at once that in the effects of the liquor potassæ Dr. Shortt seems to point if not to an antidote yet to something like one."

A case is related from the *Madras Monthly Journ. Med. Sciences*, in which the potash treatment proved successful. This is the third successful case under this treatment. Dr. S. states: "Long before I had the opportunity of testing the action of the liquor potassæ on the human subject, I ascertained the property it possessed of neutralizing snake poison, and the difficulty I experienced was to introduce some means to expedite its action in the living blood. After repeated trials and experiments, I found that brandy as a diffusible stimulant roused the nervous system, excited the circulation, and thus carried the potash into it as rapidly as possible, and enabled it to overtake and neutralize the poison in the blood. The secret of success, then, consists in bringing the patient's system rapidly under the influence of the brandy—or in other words to make the patient *drunk* as speedily as possible, and maintain this effect for some time after. During the first forty-five hours of the patient's stay in hospital he took seventy-two ounces of brandy and four ounces and a half of the liquor potassæ by the mouth, fourteen ounces of brandy and three ounces and a half of the liquor potassæ by means of enemata through the rectum, and four ounces of the liquor potassæ was used in the bath he had. In all eighty-six ounces of brandy, and eleven ounces of the liquor potassæ were used in this case!"

62. *Treatment of Snake-bite by Artificial Respiration.*—Mr. VINCENT RICHARDS records (*Indian Medical Gazette*, May 1, 1873), a series of eight experiments instituted on dogs, to test the value of artificial respiration, as suggested by Dr. Fayrer, in cases of snake-poisoning, and he thinks the results, though not absolutely successful, are very encouraging. In one case the heart's action was maintained for 10 hours, and then ceased only on the discontinuance of the artificial respiration; and in another, the heart was kept beating for 24 hours and 35 minutes, sensibility being restored after it had been completely lost.

The following is his explanation of the physiological action of snake-poison. When snake-poison is injected into the areolar tissue, as is usual in the case of a bite, absorption gradually takes place. When the poison reaches the lungs, it appears to excite the pneumogastric nerve, and through the medulla and spine the phrenic and intercostal nerves, principally leading at first to an accelerated action of the respiratory muscles, and afterwards, as a larger quantity of poison becomes circulated through the lungs, and the stimulus to the nerve-centres is augmented, to paralysis of them. Vomiting, which is a frequent, though not constant, symptom, probably arises from this irritation of the pneumogastric nerves. The medulla oblongata and spine are, indeed, primarily affected, and it is only as a secondary effect that the cerebral ganglia and cerebrum are involved. Presuming this to be the physiological action of the poison, it follows that a person fatally bitten dies from asphyxia produced by paralysis of the motor and respiratory nerves. The indication of cure, provided the effect of the poison on the nerve-centres is not permanent, is therefore artificial respiration. Moreover, if elimination of the absorbed poison can go on, as appears to be the case, we have good reason to hope for favourable results. When, however, the amount of poison injected is overwhelming, little, I think, can be hoped for from the treatment. That an animal may be affected even to convulsions, and yet ultimately recover without treatment, I have already shown (Fayrer's *Thanatophida of India*, p. 127), and I certainly think that when the quantity of poison injected into the areolar tissue would, under ordinary circumstances, be just sufficient to kill, artificial respiration, if properly maintained, might save life, as it does in the case of curara poisoning.

I believe it was this latter fact which first led Dr. Fayrer to make a trial of artificial respiration in snake-poisoning, and the subsequent encouraging results which he obtained induced him to suggest its adoption in such cases.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Sub-spinous Dislocation of Shoulder, and Reduction by Manipulation.

By H. C. MARKHAM, M.D., of Winthrop, Iowa.

Jan. 25th, 1873, I was called to visit L. N. B., a large and muscular man, who was suffering much pain in his right shoulder, and gave evidence of having received severe injury of the part. He stated that while riding in his cutter his horse became unmanageable, and he was thrown out, alighting upon his left side. He still with his right hand retained his hold upon the reins, and while in this position, by a spring of his horse, his arm was jerked violently upward. Half an hour afterwards I reached him, and found the arm dropped to the side and entire immobility present. The contour of the shoulder was decidedly unique; its superior aspect presented a broad flat surface, slightly sloping towards the back. A dinner plate could have easily rested upon this "plateau." Chloroform was administered and reduction by extension attempted; but in spite of the most protracted and varied endeavours the luxation persisted. At length I decided to adopt the plan so successful in hip-joint dislocation, viz., that by manipulation. Grasping the humerus with my right hand, and with the left steadying the scapula, the arm was brought up nearly to the side of the head; I then carried it obliquely backwards and downwards, nearly describing the movement that caused the accident (except in reverse order). As the arm reached a position which pointed to the opposite hip a distinctly audible snap was heard, which with the sudden restoration of the natural rotundity of the shoulder gave evidence that reduction was accomplished. The subsequent tenderness was extreme and protracted, showing that much laceration attended the injury.

All surgical authors agree that this form of dislocation is very rare, and it is claimed by some that it is never entire. But cases reported previous to this one prove that the latter actually occurs, and no joint was ever more completely dislocated than the case just reported, as the head of the humerus was felt against the spine of the scapula, and somewhat higher than is usually described. The mode of reduction, which alone seemed capable in this case of being made successful, was that by manipulation. In elevating the humerus the spine of the scapula served as a fulcrum, at the same time the opposing contraction of the supra-spinatus muscle was overcome, and the great pectoral muscles thus given opportunity to move the head into its normal position. Whether this be the correct theory or not, I am positive that it is the right procedure in these cases, and that all other methods are by far more difficult.

Case of Encephalocele. By W. SCOTT HILL, M.D., of Augusta, Me.

In June, 1871, I attended a lady 30 years of age in labour with her third child. The labour lasted about three hours and a half, pains not notably severe. Child a well-developed boy weighing $8\frac{1}{2}$ pounds. Nothing

unusual was noticed about the infant at its birth. A few days after a small *nævus* was observed on the skin over the anterior fontanelle. The second week a small conical tumour appeared directly under the *nævus*, about the size of a large pea, soft to the touch, and pressure appeared to cause some distress, especially if hard enough to make it disappear, which it would, but again appear on the pressure being removed. The child was occasionally seen during the next four weeks, nothing being done in the mean time, as I had hopes it might not increase very much. The child was not allowed to cry or fret, and its health otherwise was good. During the fourth week after the appearance of the tumour it rapidly increased in size. It was conical, circular at its base, about three-quarters of an inch in diameter, and about the same in height. A pulsation synchronous with the heart was plainly felt, and was also perceptible. Coughing or crying increased its size. Pressure sufficient to force it completely within the cranium seemed to have a benumbing effect similar to mild concussion. Knowing the usually fatal result of cerebral hernia, and believing the only chance for recovery was in arresting the increase of the tumour and waiting for the bony closure of the fontanelle, the following treatment was adopted as best calculated to meet the indications: A circular compress of tea lead with a diameter full twice that of the base of the tumour was sewed between two layers of chamois leather. This was placed in the centre of a strip of resin plaster (*emplast. resinæ*) some six inches long. Gentle but firm pressure was made on the tumour, the size being diminished about one-half; not deeming it safe to use greater continued force than that, the scalp, pushed up on each side towards the hernia, in order to bring constant pressure on the tumour, and the plaster fastened at the ends first. It evidently gave some pain and uneasiness at first, but it soon passed off, and the infant appeared to notice it but little. This treatment was continued until the end, excepting after a couple of months a small pad was placed between the lead compress and the adhesive plaster when greater pressure was made. There was no increase in size of the *encephalocele* after the dressings were first applied. They were not taken off except to change the adhesive plasters as often as it was found necessary. During the summer the little patient had a troublesome diarrhœa, probably due in part to artificial feeding. The plasters caused no irritation of the skin further than some itching. The child was very pale, but grew finely, and was as large and fat, notwithstanding his diarrhœa, as more fortunate infants. On his first birthday by chance I visited him, and found the fontanelle had closed, the cranium being firm when all the dressings were removed. There was some thickening of the extra-cranial tissues, but no pulsation or any of the former symptoms of *encephalocele*. The *nævus* of course remained. During the next three or four months he was again occasionally subject to attacks of diarrhœa. In autumn he was carried on a visit to another State, where he was well, and has been since that time. He is very intelligent and active for a child 22 months old, seeming to suffer nothing from the usually fatal disease.

There was also umbilical hernia, which was cured in a couple of months or more by a pad secured in place by a strip of adhesive plaster.

Case of Spontaneous Reduction of an Inverted Uterus Eight Weeks Post-Partum.—By H. HUNT, M D., of Belloit, Wisconsin.

I am induced to report the following case on account of its rarity. Prof. Thomas, in his treatise *On the Diseases of Women*, quoting only two cases in which it occurred.

The subject of this case was æt. 23, tall, thin, and feeble constitution, who was delivered of her first child August 3d, 1869, under the care of Dr. Merriman, after a natural but somewhat protracted labour. The after-birth was adherent, the cord very small and tender. The child was a female, weighing six pounds. Five days after confinement Dr. M. was called in to see his patient on account of some difficulty she experienced in voiding her urine, and while introducing the catheter he discovered the inverted uterus low in the vagina. The next day I was called in consultation. Up to this time there had been considerable flooding and much uneasiness on the part of the patient, but not sufficient to create much alarm. Dr. Taggart being also subsequently called in consultation, he advised an operation to restore the organ, to which a cordial consent was given on the part of all the physicians present, and the patient and her friends. Therefore, on the seventh day after confinement, Dr. Taggart, assisted by Drs. Strong, Merriman, and myself, made an unsuccessful attempt to restore the organ under the influence of ether, which lasted about one hour, but without success, owing to the too rigid contraction of the circular fibres of the neck of the uterus. The rubber-bag pessary was introduced, an anodyne administered, and the patient placed in bed quite exhausted. Ten days after the operation I was called in to see both mother and child. The mother was quite feeble, and was labouring under a severe cough; had had but little flooding, and the condition of the womb remained unchanged; she nursed the babe, which had diminished in weight from six to three pounds. After making three or four visits both appeared much better, and I discontinued my attendance. She began to stand alone and walk a little four weeks after the operation, but without any apparent change in the condition of the womb. About this time she removed to a distant part of the city, and I did not see her again until the 1st of October, nearly two months after her confinement, when I found by an examination per vaginam that the uterus was completely restored to its normal character.

According to my advice and instruction she had watched the progress of events as well as she could. About six weeks after delivery she noticed a change was taking place. The tumour was evidently rising high and diminishing in size, and this change continued to go on until she could not feel the tumour. So between the sixth and eighth week after delivery nature restored the uterus without external aid. After weaning the child the catamenia appeared and she menstruated for two years thereafter and until her death, which occurred some six weeks ago of pulmonary hemorrhage. Her lungs were unusually tuberculated.

Taking the history of this case in connection with the new doctrine of *post-partum* involution by fatty degeneration, the probability is there would be but little difficulty in returning the womb at or about the sixth or seventh week *post-partum*, for at this time the fibres have but little contractility or power of resistance, and the body of the organ could be pretty readily passed through the neck by the hand and plug operation.

Absorption by Suppurating Surfaces. By A. YOUNG, M.D., of Prescott, Pierce County, Wisconsin.

In the number of the *American Journal of the Medical Sciences* for July, 1873, page 140, Dr. John Ashhurst, Jr., in an article on iodoform, expresses his "doubts whether drugs are absorbed to an appreciable amount by suppurating surfaces." As bearing upon this subject, and for the benefit of those who might be led by so high an authority to omit due

caution in the external use of active drugs, I desire to state that recently in a case of a severe and painful suppurating burn, occurring in a woman, I ordered an ointment containing fifteen grains of powdered opium to the ounce. This was applied more freely than I anticipated, probably two ounces being used in the dressing, and within twelve hours narcotism was developed to such a degree as to seriously endanger life.

DOMESTIC SUMMARY.

Treatment of Laceration of the Female Perineum.—Prof. D. HAYES AGNEW (*American Supplement to the Obstetrical Journal of Great Britain and Ireland*, June, 1873) speaks, after further experience, with great confidence of the value of his operation described in 1867 (*Pennsylvania Hospital Reports*) for the cure of lacerations of the female perineum. "The chief points," he says, "of practical interest are the closure of the recto-vaginal septum, and the restoration of the perineal continuity at a single operation; the use only of the interrupted wire suture, and no lateral division of the sphincter, as advocated by some surgeons. The plan of treatment is as follows:—

"The bowels are freely moved early in the day previous to the operation, and, after the action of the medicine, one or two grains of opium are administered, in order to prevent the descent of feculent matter into the rectum. After etherization, the patient is placed on the back, in the lithotomy position, the limbs supported by assistants, and the sides of the laceration denuded to the extent of one inch in breadth, removing the thinnest possible layer of tissue. Next, the recto-vaginal septum is freshened. This is sometimes best



done with the scissors. This constitutes the first stage of the operation. The second consists in the closure of the parts. A long needle, supported on a handle—the eye being near the extremity—is armed with an iron thread, which has been well coated with silver. I use for the first suture iron, in order that

it may not break, as is sometimes the case with the silver wire. Indeed, the whole success of the operation depends upon the proper disposition of this suture. The needle is entered three-quarters of an inch from the margin of the wound, below its lowest point, at the anterior part of the ischio-rectal fossa, and carried forwards and upwards, until it appears on the middle of the vaginal surface of the septum, just above the line of denudation; the thread is then picked out of the eye of the needle, and the latter withdrawn, and made to pass unarm'd through the corresponding parts on the opposite side, emerging on the septum, close to the first. The wire is now passed through its eye, and, as the needle is withdrawn, makes the complete circuit of the wound, so that when it is tightened, the parts are pursed together. Two or three other silver sutures are inserted, the blood carefully sponged away; or, what is better, washed away by a stream from a syringe, and the parts approximated, to favour which the limbs should be brought together. To maintain the apposition, perforated shot are run down the wires, and clamped with a pair of compressing forceps, a superficial suture is sometimes inserted with a curved needle between the deep ones.

"The subsequent treatment consists in securing the limbs of the patient together, removing the urine two or three times in the twenty-four hours, or by allowing a self-retaining catheter to remain in the bladder, having a small rubber tube attached to its extremity, in order to conduct the urine into a vessel properly placed.

"The bowels are to be kept quiet for seven or eight days with opium, and any painful accumulations of flatus in the rectum are to be removed by carefully introducing a female catheter.

"The diet should consist of milk, animal broth, eggs, cream, toast, and, after the fifth day, some solid food. The stitches are not removed until the seventh day; and on that day, or the day following, the bowels should be opened by administering small doses of castor oil, or some saline, at considerable intervals (two teaspoonfuls of oil every fourth hour). The utmost caution is to be observed in securing this first evacuation. The nurse should be directed to support the nates—the patient to avoid any strong straining effort—and, if necessary, the contents of the rectum may be softened by throwing into the bowel—very gently—a little warm water. It may happen that the rectum becomes impacted with a large mass, the expulsion of which would certainly tear asunder the tender line of union; and then it is proper to core the mass, by picking a channel through its centre, and so enlarging this opening until its peripheral walls fall together, and may be safely expelled. Once opened, the bowels should be locked up for four or five days, in order that the cicatrix may become solid."

Rupture of Axillary Vein during efforts at Reduction of Dislocated Shoulder of six weeks' standing.—Dr. D. HAYES AGNEW reports (*Phila. Med. Times*, Aug. 16, 1873) the following case of this rare accident:—

The patient, a female, aged 60 years, suffered a sub-coracoid luxation of her right shoulder. Several unsuccessful attempts at reduction had been made before she applied to Dr. Agnew for treatment. The dislocation, which was now of six weeks' standing, Dr. Agnew endeavoured to reduce by the method of La Mothe. Failing in his first effort, he tried again, having attached a fillet to the arm. Steady and persevering extension was exerted for several minutes, while an assistant's hand was held in the axilla to guide the head of the bone towards the glenoid cavity. Just after this second effort was completed without success, a sudden and rapidly forming swelling appeared over the right pectoral region, distending in an instant the entire right breast, rendering it exceedingly prominent, and forming a firm but fluctuating tumour.

Simultaneously appeared the most alarming symptoms of marked alteration in the circulation. The patient instantly became cold, clammy, and collapsed; respiration ceased, the eyelids were half closed, and the heart's action was barely perceptible over the apex, and not at all at the radials. Professor Agnew's thumb at once compressed the subclavian artery, while the tongue was drawn forward by a tenaculum, and cold douches, ammonia, artificial res-

piration, etc., instantly tried. At first it seemed that the patient would die in a condition of fatal syncope; but by the opportune presence of a strong electric battery, the current was quickly passed along the phrenic nerves, and in a few moments feeble respiratory efforts became visible. The application was continued for fifteen minutes, at the end of which time the patient had rallied so that the pulse was plainly perceptible at the wrist, and the surface commenced to show signs of warmth and life.

Preparation had meanwhile been made to ligate the subclavian, but upon removing the pressure it was found that the pulse could be felt at the wrist with a force equal to that of the other side; that the tumour was not tense and distended, and that it did not pulsate, neither did it seem to be filling with any rapidity or force.

The conclusion was therefore educed that the axillary or some other large vein had been ruptured, rather than the artery. No small vessels could have yielded so large and rapid a hemorrhage. Firm compresses were therefore applied over the swelling, and confined by a broad bandage, while pressure was kept up for two hours upon the subclavian artery, in order to lessen the supply of blood coursing through the arm.

Meanwhile stimulants were freely administered, and artificial heat constantly applied to the extremities, and in three hours reaction was established to such extent that the patient seemed out of immediate danger.

The swelling, which was accurately defined by the pectoral fascia, extended slowly backward, but did not increase in tenseness. The patient passed a comfortable night, complaining, however, of stinging pains in the arm and breast, but with no further symptoms of depression. From this time onward her improvement was rapid, the pain and swelling gradually subsiding, and in ten days she was discharged from the ward. The blood gravitating downward and backward below the fascia finally made its appearance beneath the skin, where it remained until it was absorbed, weeks afterwards. Compression was continued for several weeks, followed by stimulating liniments; and now, ten weeks afterward, having declined any further attempts at reduction, she has an arm which, although stiff and somewhat painful, seems to be forming for itself a new articulating cavity upon the inferior costa of the scapula.

Dr. De Forrest Willard appends to the report notes of 23 recorded cases of rupture of an axillary vessel produced by efforts at reduction of old dislocations of the shoulder. Of these cases, 17 are recorded in Hamilton's *Treatise on Fractures and Dislocations*, 4th ed., pp. 563-4; 3 in Erichsen's *Science and Art of Surgery*, Phila., 1869, p. 307; 1 in *Am. Journ. of Med. Sci.* for April, 1865, p. 498, and 1 in *Med. News*, for April, 1873, p. 58. Dr. Willard also includes Adams's case (*Holmes's System of Surgery*, vol. ii.) of rupture of the artery by the same force which caused the dislocation, and to which should be added the similar cases reported by Bérard and by Sir Astley Cooper (*Dislocations and Fractures*, Phila., 1851, p. 334). In Mr. Callender's excellent paper on this subject (*St. Bartholomew's Hosp. Rep.*, vol. ii. p. 96) there may be found notes of two cases not included in Dr. Willard's list. One of these is a case, like Dr. Agnew's, of rupture of the axillary vein only, in an aged female, after efforts at reduction according to White's method. In the other case the artery was ruptured by the direct force of twelve or sixteen men, under the direction of a "bone-setter."

From a study of the cases recorded, Mr. Callender (*loc. cit.*) concludes that "the occasional occurrence of this accident does not rule against the recognized practice of attempting the reduction of old dislocations, but should make us cautious of using movements calculated to overstretch the vessel, such as circumduction and extreme tension, as by White's method."

Treatment of Diphtheria with Calomel and Soda.—Dr. EDWARD L. DUER, of Philadelphia, highly extols (*American Supplement to Obstetrical Journal of Great Britain and Ireland*, July, 1873) the efficacy of small doses of calomel and large doses of the bicarbonate of soda, and the free use of nutritious food and brandy. He states that he has treated a large number of cases of all grades of severity by this plan during the past season with satisfactory re-

sults, and he acknowledges his indebtedness to Dr. Harlow, in the first instance, for the suggestion of this plan of treatment.

The two following cases will illustrate this mode of treatment.

"Grace V., æt. five years, previously strong and well; after short prodromic symptoms and a marked chill, presented all the general and local evidences of diphtheria. Her pulse was 140, quick and feeble; skin hot, face suffused; temperature in the morning, $103\frac{1}{2}$; great restlessness, bowels irregular, and the tonsils, with a dark background, were almost covered with the dirty-white, closely adherent diphtheritic membrane.

"Her sister Alberta, æt. 7, was taken sick the same morning, and presented an almost identical condition. The one was put at once on the chlorate of potassa treatment; 10 grains every third hour, as recommended by Vogel, and the other on calomel and soda, $\frac{1}{8}$ gr. of the former, and gr. v of the latter, every two hours. The only topical application was used alike in both cases, a weak solution of carbolic acid as a disinfectant, and the same supporting and stimulating plan was adopted in both. The following morning I noted little change in either case, excepting that Gracie had more difficulty in swallowing, though I may remark that neither of the children could swallow fluids without having them occasionally gush from the nostrils. During my evening visit on the second day, however, I noted the most marked improvement in Alberta, while Gracie's symptoms showed little evidence of yielding.

"Having now continued the calomel thirty-six hours, believing its effect to be rather in proportion to the time of continuance than to the entire quantity given, I withdrew it and continued the soda as before. By this time, in this case, the false membrane was coming away in detached fragments, and there was little evidence of local trouble left, but in the case of the other child, there had, as yet, been no change for the better. On the evening of the fourth day I found Alberta's tonsils again covered with false membrane, when I renewed the use of the calomel for twenty-four hours, with the same positive result. From this time the soda, which had been continued throughout the attack, was depended on entirely. At no time did the little patient show the slightest evidence of pyalism, but as soon as she had been long enough under the influence of the calomel the false membrane seemed to yield up its connection with the tonsils, while at the same time the general symptoms began rapidly to abate. On the morning of the fifth day, the temperature had fallen to 99° and the pulse to 90, and from that time she steadily improved, and convalesced under the use of tonics and nutritious diet.

"On the other hand, Gracie, to whom the potass. chlorat. had been given, continued so alarmingly ill that I was induced to substitute the calomel and soda treatment on the fourth day, and with a like immediate result so far as the local trouble was concerned, but her convalescence, unlike her sister's, was protracted, tedious, and subsequently complicated with bilateral paralysis of the palate and lower limbs.

"In the course of a few weeks, I had occasion to treat five other children in this family, and it is scarcely necessary to say that the same plan was adopted, all responding quickly and positively to it."

Excessive Vomiting during Pregnancy.—Dr. M. A. Pallen, formerly Prof. of Obstetrics in the St. Louis Medical College, relates (*St. Louis Medical and Surgical Journal*, September, 1873) an interesting case of this in a patient whom he was called, July 16th, by Dr. Alleyne to see in consultation. Dr. A. stated that the lady was in the sixth month of pregnancy and would not retain anything on her stomach—no food, no drink. He stated that unless she was relieved she would die for want of nourishment, and that the induction of abortion was the remedy. Dr. P. found her with a pulse of 96, incessant nausea, vomiting whenever anything was taken into the stomach; sleeplessness at night or during the day, no delirium, no tinnitus aurium; no dimness of vision. I claimed a delay of twenty-four hours to try two remedies heretofore untried. One was the hypodermic injection of morphia over the region of the stomach, and the other was the injection of beef essence and brandy into the rectum. On the next day we again visited our patient. The remedies had done no good.

She vomited, as ever, the little ice-water she took, and the injections could not be retained at all.

Dr. P. then ascertained by examination with the finger that there was granular erosion of the cervix, and was of the opinion that nothing effectual could be done short of abortion. Of the various methods recommended for that purpose, he determined to employ that of puncturing the membranes for the following reasons: "The child was not viable and could not be saved. I have known cases, when the child was viable, as in the eighth or ninth month of pregnancy, and when I brought on premature labour to allay excessive and uncontrollable vomiting, that the vomiting did cease, almost immediately after the rupture of the membranes and before the emptying of the uterus.

"With a small-sized uterine sound I punctured the membranes. On the evening Dr. Alleyne called for me and told me that in an hour after the operation, she took, with decided appetite, some beefsteak and retained it; at night she did the same, and when we saw her in the morning, she and her mother informed us that she had slept well, and that she had a good appetite, having eaten various things for breakfast. About forty-eight hours after the operation the foetus and secundines came away, and she made a rapid recovery.

"I am aware that there is high authority against the emptying of the uterus in cases of excessive vomiting during pregnancy. I am aware, too, of the sudden and favourable changes which sometimes take place in such cases. The experienced physician can often foresee that such will be the result, and he will persevere with his remedies. I will admit that it does happen, even when he despairs. But it also happens, that although our patients occasionally get well, when we expect them to die, on the other hand, they sometimes die when we expect them to get well. We must reason from a general rule, and not from an exception."

Cancrum Oris successfully treated by a Saturated Solution of Iodine.—Dr. J. G. MILLER reports. (*Kansas City Medical Journal*, August, 1873) three cases of cancrum oris successfully treated by tonics and the local application of a saturated tincture of iodine prepared by putting as much iodine into the compound tincture as it would dissolve.

Ligature of the External Carotid Artery.—Dr. L. R. LONGWORTH observes (*Archives of Scientific and Practical Medicine*, May, 1873) that "the greatest difficulty of securing the artery and the apprehended danger of secondary hemorrhage, have so far influenced the minds of surgeons, that ligature of the external carotid, compared with that of the primitive vessel, has been a very rare operation, and would, in all probability, have been still rarer, were it not for the fact that the former operation possesses two advantages over the latter, viz., first, that it is more efficient in arresting the circulation in the parts beyond the ligature, unless at the same time with the common carotid the internal carotid be also ligated; and, secondly, that it is free from certain grave dangers incident to the latter operation consequent upon interference with the cerebral circulation and the nutrition of the brain."

Dr. L. fully discusses the relative advantages and disadvantages of these two operations, and gives the following as his general conclusions:—

- "1. That ligature of the common carotid is the widest in its application, but most dangerous and least efficient.
- "2. That ligature of the external carotid below the digastric and stylo-hyoid muscles is more limited in its application, but less dangerous and more efficient.
- "3. That ligature of the external carotid above the digastric and stylo-hyoid muscles is the most restricted in application, but also safest and most effectual.
- "4. That ligature of the external carotid on both sides has hitherto been uniformly successful, and is the most efficient measure at our command for arresting the distal circulation."

Ovarian Tumour removed by Enucleation.—Dr. WALTER BURNHAM, of Lowell, Massachusetts, reports (*Boston Med. and Surg. Journ.*, July 24, 1873) a case of this. It was his one hundred and ninety-ninth ovarian operation,

and he says that the operation required somewhat less time than his previous ones.

After opening the abdomen and drawing from the cyst, with Wells's ovarian trochar, nearly fifty pints of clear, limpid serum, he made a small slit through the peritoneal coat near the pedicle, and with the handle of my scalpel separated the two coats from each other to a small extent, until I could grasp them in either hand, and at once completed the separation by pulling them apart, and thus removed the entire sac proper as belonging to the tumour; while that portion composed of peritoneum was laid back upon the abdomen, that I might examine it, and wait a little for hemorrhage to start, if at all. The effects of the atmosphere, though at a high temperature, soon contracted and corrugated the peritoneum to less than half its size, when I separated the cyst from it. On examination of the inner surface of the peritoneum, I found the vessels spread out upon it in a complete network, like that of an inflamed conjunctiva largely magnified; but there was no hemorrhage, except one small artery where I divided the peritoneal coat; and here a small clot had formed, and I thought best to put on a ligature, as I did also on one upon the omentum, leaving the ends out at the lower angle of the incision, to keep it open for the discharge of any matter that might be deposited in the cavity.

After waiting more than an hour to allow the force of the heart to return, the sac was covered by a warm napkin before returning it into the abdomen. But finding no bleeding, I then placed it back into the cavity of the abdomen, and closed the wound by three sutures, one of which I passed through the edge of the peritoneum where I made the slit, to secure that point to the opening, in case any clot should form and require suppuration to remove it. Over this, adhesive straps and a compress of cotton, to fill the vacuum of the abdomen, were placed upon her, secured by a straight bandage. The patient made a speedy recovery.

Dr. B. remarks, somewhat singularly, that he *believes* "Dr. Miner, of Buffalo, was the first to recommend this mode of treating the pedicle," and adds that "much credit is due to him for what seems to me a very great improvement over all others."

Recent Cholera Epidemic in New Orleans.—Prof. Jos. JONES, in a letter to the editors of the *Boston Med. and Surg. Journ.* (July 31, 1873), states that this epidemic "which commenced in the early part of February and disappeared in the latter part of June, was less severe than in the two previous visitations of this pestilence in New Orleans. Although the fatal cases were marked by the prominent symptoms of Asiatic cholera, and presented, upon post-mortem examination, its characteristic lesions, the vast proportion of the cases, 'when taken in time,' yielded readily to treatment, and the mortality has been comparatively small. Thus, during the months of February, March, April, May, and June, 117 whites and 116 blacks (total, 233) died from what was registered in the official mortuary reports as cholera sporadica; and cholera morbus and cholera infantum destroyed 62 whites and 22 coloured; diarrhoea and dysentery, 109 whites and 48 coloured; total deaths from all intestinal diseases during the past six months, white 366, coloured 234 (total, 600).

"This is comparatively small mortality from cholera in a population of 200,000; and as the whites constitute about three-fourths, and the coloured people only one-fourth, it is evident that cholera, as well as other intestinal diseases, has been much more fatal amongst the coloured population. This difference appears to be due in a large measure to the fact, that as a general rule, the coloured people occupy the more unhealthy and crowded portions of the city, and are less careful in their habits and diet.

"The sudden subsidence of the cholera, is not to be referred to the sanitary condition of the city, which could not, perhaps, be much worse at this season of the year; nor to the universal employment of any special means of disinfection. Numbers of cases have occurred in localities where no disinfection was practised, and it is probable that only the severe and fatal cases have been reported to the local sanitary officers. The peculiarly mild character of the recent epidemic, may be due to certain unknown conditions of the atmos-

phere and soil, and to the heavy rain-fall, almost twenty-two inches of water having fallen during the past six months."

Child's Head Impaled on a Pitchfork.—Dr. W. M. GOODLOVE reports (*Clinic*, September 6, 1873) a case of this which is interesting as affording another example of the many already recorded of the deceptive nature of the early symptoms in injuries of the brain.

A child, thirteen months old, in the arms of her sister, was near the side of a stack of grain, when a pitchfork was let slide down the stack with the tines forward, one of which entering the child's head at the junction formed by the right parietal and frontal bones, passing obliquely downward, penetrating the right hemisphere of the brain, and emerging beneath the malar bone about half an inch in front of the ear. The little girl (still holding the child) withdrew the fork before the father could get to her assistance.

When seen by Dr. G., thirty minutes afterwards, the child was *nursing at the breast*. After the fork was withdrawn the child cried. It caused no shock.

The next day, July 23d, Dr. G. found the child sitting in the mother's lap laughing, showing no signs of pain; bowels were moved twice through the night; temperature was normal; voluntary motion was good; the pulse was good. It had rested well all night, except during paroxysms of coughing. Here I learned that the child had had a severe whooping-cough, and when it coughed a slight hemorrhage ensued from the orifice of the wound, but not of much moment.

24th, Patient resting well; cough not troubling it so much; pulse accelerated; pupils contracted; no nervous excitement yet developed. The child does not nurse so often. Its head has been kept elevated and the wound discharges more freely.

25th, 7 A. M. Patient has taken more nourishment to-day. It is marvellously better than yesterday. The pulse is somewhat stronger, though oppressed. Ice applications still continued. 8 P. M. Wound inclined to heal below; cough better, bowels not moved. It will not nurse. 10.30 P. M. Patient very restless, with quick pulse; disturbed sleep; anorexia; sub-sultus tendinum; face flushed; pupils contracted; wound inclined to heal.

26th, 7 A. M. Tetanic symptoms decidedly present. Inflammatory and arterial action abated. Total paralysis of the right eye and left extremities; contraction of pupils and some squinting of the left eye.

27th, 9 A. M. Convulsion alternate with coma.

28th, 2.30 A. M. Patient has rigors at times and is comatose at times. Death in convulsions.

We have omitted the account of the treatment.

Gunshot Wound of Stomach and Kidney; Recovery.—Dr. BROOKS reports (*Chicago Med. Journ.*, Sept. 1872) the case of a man, æt. 30, who accidentally shot himself at 11 A. M., Dec. 31, 1871, in the epigastrium, the ball, a half ounce one, taking a downward, backward, and slightly lateral direction. When seen by Dr. B., five minutes afterwards, there was great nervous shock, cold, clammy skin, great prostration, constant nausea, pain in the stomach, restlessness, respiration feeble, and some thirst. Surface wound about two inches to the left of the centre of the sternum, having cut the size of the ball from the lower edge of the cartilages of the false ribs. Directed him to be removed to an upper room and laid recumbent, head low, a cloth wrung from hot water to be placed over the wound and to be kept constantly applied, small pieces of ice (as large as a small filbert) placed in his mouth. An opiate was also given a few hours afterwards. At 8.15 P. M. vomited between one and two pints of coagulated blood; at 9.10 P. M. passed about three pints bloody urine, resembling the blood that flows from the veins of an individual killed by lightning; a fourth drachm was now given. At 10.20 P. M. reaction commenced feebly; from 11 P. M. to 3 A. M. slept quietly, and on awaking vomited a large quantity of blood, which was the last blood vomited; at 4 A. M. passed an ordinary urinal half full of fluid, mostly blood; from this time he urinated about once in six hours, blood always passing till the fifth day, when the urine was of a natural colour and quality.

"After the first sixteen hours he had no pain whatever, and slept well every night. At the expiration of forty-two hours he was allowed one teaspoonful of iced milk, in four hours two teaspoonfuls; this was gradually increased till on the fifth day he was allowed one-third of a tumbler of the iced milk every six hours. Not an untoward symptom occurred. The hot cloth wet, was kept applied up to Jan. 6, 1872. No other medicament was used. The fourth day the bowels moved naturally. On Jan. 8th, he was removed to his home in the country. On or about May 1st, he returned to the city, and followed his occupation as a carpenter. On examination the 7th of May, I found the bail under the skin, about two and a half inches from the spinous processes of the vertebrae, and nearly outside the eleventh rib of the left side, having passed out of the abdominal cavity between the eleventh and twelfth ribs. The direction of the ball, the vomiting of blood, the passing of blood by the urethra, the character of the shock and prostration, point unmistakably to the cutting of the stomach and left kidney by the ball."

RECLAMATION.

To the Editor of the American Journal of the Medical Sciences.

SIR: Surgeon G. A. Otis, who has prepared, under the direction of Surgeon-General Barnes, United States Army, the Surgical History of the War of the Rebellion, at page 26 of the Introduction to the First Part lately published, has called attention to a paper of mine, written early in 1871, and published in the fifty-fourth volume of the *Medico-Chirurgical Transactions*, on the Classification of Injuries and Surgical Operations in time of War, in a way that makes it imperative on me to reply at some length. Although the general purpose of my paper is briefly referred to at the commencement of Dr. Otis's remarks upon it, the words subsequently quoted without their context, and the comments upon them, might cause it to appear that I have attempted to depreciate the professional labors of the surgeons of the United States during the great struggle, the miseries of which they were doing their best to alleviate. Nothing could have been further from my intention, and it appears to me that such an interpretation is not warranted by anything contained in my paper. I have always admired the zeal and the immense self-sacrificing devotion of the United States surgeons, as well of the volunteer service as of the regular army, during the prolonged war, and have never expressed any other sentiments on the subject. But I have thought, with regard to the compilation of their labours, that much time and pains would have been spared had there been employed a system of classification of the injuries, which they had not only to treat but also to tabulate in statistical returns for official information, different from that which was used for the purpose. At the same time I did not ascribe it as a fault to any one that a different classification was adopted from that which seemed to me a more efficient one. I knew that during the Crimean War for the first five months, chiefly in consequence of no efficient system of classification having been supplied, the English statistical returns were found so valueless for scientific purposes that the attempt to use them in detail was altogether abandoned. It was from experience of the results of the form of classification which was employed in 1855 in the Crimea, and from much consideration of the subject, that I was led to consider that form the best calculated to insure accurate returns of the injuries of war in the first instance, and to secure facility of compilation afterwards, but I did not pretend to dogmatize on the subject; what I asked in my paper was that this form should be considered along with others by competent persons. Dr. Otis writes that "systems" must be made to conform to national habits and organizations, but this can hardly apply to systematic returns of injuries which are universal in their nature and quite uninfluenced by national peculiarities. The best form of classifying the wounds

resulting from war, whatever it may be, in one country must surely be the best in another country.

Dr. Otis quotes part of my remark as to the figures of the American Field "Tabular Statements" being "almost practically worthless." It may be observed that Dr. Otis himself, at page 25 of his Introduction, quotes from an official circular that "the surgical statistics of the war were absolutely worthless" previous to September, 1862, owing to the nature of the returns then in use. I only discussed the question whether the revised forms of returns subsequently adopted were calculated for giving statistical information of as much scientific value as other forms of returns. In the surgical history, so far as it has gone, Dr. Otis has reclassified the figures of the field returns, after great research and labor, in forms essentially different from the original ones; forms very similar indeed, though more extended, to those which I advocated for the primary returns. The remark of Dr. Otis, that a classification which may be excellent for the British Army with its corps of trained medical officers could not have been advantageously introduced into the American service chiefly attended by civil surgeons, seems to be an unnecessarily disparaging one. The British surgeons had no special training when the form of classification which I described was placed in their hands, and I never heard that they found any difficulty in following its directions.

I regret very much the unintentional mistake (Dr. Otis calls it a misrepresentation) which I made as to the number of persons at one time engaged in preparing the records of the war in the Surgeon-General's office at Washington. Some years ago an American military medical visitor at Netley, speaking of the energetic and vast scale on which the history of the war was being prepared, told my colleague, Dr. Mackinnon, and myself that there were quite two hundred clerks engaged in preparing the records when he left Washington. He certainly did not mean the purely surgical records, and I did not understand him to mean so, but the records in all their branches; and I was surprised on referring to my paper after reading Dr. Otis's comments upon it to find I had limited the statement to the surgical statistics. I can only account for it by the surgical results of the war being uppermost in my mind at the time of writing the paper. But I think any one fairly reading my remarks would not fail to notice that I intended the general history of the war, for in the next sentence, when comparing the number of persons engaged in compiling the English history of the Crimean War, I did not confine myself to the compilers of the surgical part, but spoke of the whole of the historical record of the war. I fell into an error, however, for which I express my regret, and which I am glad Dr. Otis has corrected; and I can only add, that as I sent copies of the paper to the Surgeon-General's office as soon as it was printed, if Dr. Otis or any one had then indicated the exaggeration in my statement, I would have gladly taken steps to correct it myself.

I refrain from entering upon personal topics, such as the omission in the work under notice, of all mention in the lists of writers published at p. 23 of the Introduction of an essay of mine on Gunshot Wounds in *Holmes's System of Surgery*, which was reprinted in the United States during the war, and even made one of the articles of the standard supply table of the military hospitals, and some similar matters, but will merely repeat my regret that the remarks in my paper on classification should have given the offence to Dr. Otis which they evidently have done; they were not intended to be offensive to any one. What I am especially anxious to explain is, that my paper, which I know not many United States surgeons are likely to see, in no way has reference to the professional work done by American surgeons in the field, or to anything else but the arrangement of the returns in which their work was ordered to be classified and tabulated for statistical purposes. I must leave those who possess the paper to judge whether the remarks in it are worth any attention or not.

I have the honor to be, etc.,

THOMAS LONGMORE,
Surgeon-General.

NETLEY, July 7, 1873.

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Professor and Director of the Gynecological Clinic in the University of Rostock.

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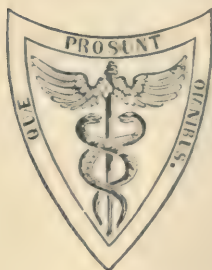
THE
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OF THE
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EDITED BY
ISAAC HAYS, M.D.,
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA: MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE AMERICAN
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ASSISTED BY
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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Several original articles and bibliographical notices in type have been laid over for want of room. We ask the indulgence of our contributors, and assure them that their favours shall receive early attention.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of August.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

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ART. I.—*Traumatic Neuralgia; Section of Median Nerve.* By S.
WEIR MITCHELL, M.D., Member of the National Academy of Sciences.
(With five wood-cuts.)

MISS T. at the age of two and a half years ran a splinter into the palm of the right hand over the point at which the median nerve divides in order to send branches to the thumb and fingers. The fragment, which came from a barrel hoop, was said to have been, when it entered, a third larger than when taken away twenty years after. It passed so deeply into the hand that it was thought best to poultice the part and encourage suppuration before removing the foreign body. To the physician's surprise the wound healed rapidly, every sign of irritation passed away, and the child soon after was taken from this city, in which the accident took place.

The piece of wood could always be felt distinctly in the palm, but only once, when in Panama, at the age of twelve, was its presence in the least degree annoying. When 22 years old, Miss T., then in Naples, caught hastily the falling top of a trunk, and in so doing bruised the region in which lay the splinter. Great local pain and slight swelling followed, but, growing better in a few days, left her with some uneasiness and discomfort in the part struck. After three months she began to have pain in the right shoulder, for which Dr. Suchet, of Paris, ordered liniments, regarding it as rheumatic. In May of the same spring of 1871, the pain in the hand grew worse, and in July it was severe in the median palm, thumb, and palmar face of the index-finger. At Plombières, in August, and later while travelling, it increased, and extending to the forearm assumed throughout a hyperæsthetic character, so that she began to guard the parts from foreign touch. It now became plain that the trouble was due to the splinter, and accordingly, at Milan, October 22, 1871, Dr. Sapolini, Surgeon to the King of Italy, assisted by Dr. Guerini, after a careful search removed the splinter, which is said to have lessened in size, is certainly smoother than it could have been at first when twenty years before it entered her palm. Dr. Sapolini, whom I had the pleasure to meet in Milan last summer, told me that it lay among the diverging median nerve filaments, and was taken away with great difficulty. On awaking from the chloroform sleep, she was at once conscious of intense

pain in the fore-finger and thumb. Within a few days the fingers contracted in firm flexion, the pain became exquisite, a touch was torture, and the median palm from time to time swelled and throbbed so as to induce the belief that pus had formed. Under poultices it would, however, subside, and in a few days go through the same process anew. The wound healed in a month, but thenceforward she lived under the influence of morphia, being almost entirely sleepless from the incessant pain and exquisite hyperalgesia which made the lightest contact a thing to be guarded against by precautions which seemed almost absurd. Despite the pain, a successful effort was made to straighten the fingers by the aid of a dorsal splint, and on its removal they remained straight or extended. The torment was worst on the thumb, median half of face of forefinger, the annulus, and the median palm close to the forefinger. It also extended on to the back of the hand, where it affected the dorsal surface on the radial side of the hand, and especially the last two phalanges of the second and third digits where the pain was no less than in front. Throughout all the regions named it was a constant burning pain, with red and smooth surfaces upon which the fall of a bit of lace or a veil edge was simply anguish.

In this condition Miss T. went from one well-known physician to another, the pain passing up the forearm and involving its whole surface in a hyperalgesia which varied in degree and was accompanied with a disturbance of the local circulation in the limb, so that it was now intensely flushed and now pale in spots. The shoulder also continued to be painful, and associated neuralgias awoke in the right face and neck and even in the right foot.

The whole range of usual local and general therapeutic means failed to lessen her pain, although heat, cold, actual cautery, Vienna paste, hypodermic injections of morphia, blisters, electricity (induced currents) were employed in turn, with an endless list of others which I need not catalogue. At length, in November, 1871, Dr. Sapolini found, after the most careful study, that, while protracted pressure on the median nerve in the forearm caused only an increase of pain, pressure on the musculo-spiral, at first increased and by and by destroyed not only the pain but the sensitiveness so completely that the finger and thumb could be roughly handled both on their dorsal and palmar faces. Again and again he applied this test, and when fully convinced that he was not mistaken and that relief always followed the pressure, he cut down on the musculo-spiral nerve above the outer side of the elbow and removed an inch of it. Absolute ease at once followed this section, pain and sensitiveness alike disappearing, while, to the amazement of the skilful anatomist who operated, the loss of touch in the radial regions of the back of the hand was so slight that he doubted there being any loss, although a considerable amount of wasting in the extensors and an absolute wrist-drop showed that the muscular distribution of the nerve had suffered. The full extent of this loss I have not learned. It left for a time a hollow in the forearm, but within a few months (four or five) the arm regained its plumpness, and as to the lack of power in the extensors it was certainly slight in the spring of 1873, although at this time the pain was enough to so far inhibit movement as to make it no easy task to judge of the real amount of motility. As to the sense of touch being but slightly hurt anywhere in the hand by the section of the musculo-spiral, I have also the assurance of Miss T., whose curiosity led her to examine the part with care.

On the eighth day after the operation the pain suddenly returned. The

sensitiveness to touch remained somewhat lessened on the back of the fingers and thumb, and on the whole the torture was thereafter less extreme, but it was still terrible, and the associated sensations grew worse, so that, as I have many times seen in other cases, the whole skin grew irritable and the sources of torment multiplying, bright lights and sharp sounds increased the pain, sensitive spots were developed on the scalp, a thick crop of herpetic eruptions covered the right arm, neck, and face, while the general health began to fail despite the most careful and skilful efforts to sustain it. Something was due no doubt to the prolonged healing of the wound, which was interfered with by frequent abscesses, and at last at the third week by erysipelas.

After the failure to gain full relief from Dr. Sapolini's well-considered operation, Miss T. consulted very many surgeons and physicians of distinction, but without obtaining any further good result. In August, 1872, after using by Sir James Paget's direction a long series of hot water arm-baths, Miss. T., by his advice, returned to America. In January, 1873, I saw her in New York, and in the middle of February she placed herself under my care in Philadelphia, where, with the kind aid of my friend Dr. Wm. W. Keen, I made the following notes of her case.

At this time, with no notable functional trouble, Miss T. was thin and weak and singularly liable to sudden flushes or as sudden pallor. She slept with the hand propped upon its ulnar edge, and awakened many times at night when it fell over or was touched by the bedclothes, while all day long she devoted herself to the task of shielding the part from every foreign contact. This anxiety to avoid having the hand touched, and the constant influence of pain, gave to her physiognomy a singular expression of suffering and vigilance, such as I have rarely seen since the terrible traumatic neuralgias of the late war.

The arm presented numerous marks due to the use of cauteries, and on the palm at the edge of the thenar eminence was the scar of the operation for removal of the splinter, and above the elbow was the cicatrix left by that of the nerve section.

Motility.—Miss T. can use the deltoid, and flex and extend the arm, but, if the movement be sudden or extreme, it causes pain in the shoulder and neck. She can slowly and with pain pronate and supinate the forearm. She cannot extend the wrist, but on its being extended can delay its fall, chiefly by using the radial extensors. Slight power to flex wrist. The first and second fingers have no motility; but she can stir the last joints of the other fingers in flexion and extension. Probably most of this lack of power is due to long disuse and the inhibitory power of constant pain. The future history proved this view to have been correct.

Sensation.—This was examined by nerve regions. Touch and power to localize or place a touch are normal in the musculo-cutaneous distribution. Touch is well felt above scar left over the point of section of the musculo-spiral. Touch just below the scar is badly felt, and is referred above the scar. The radial and median sensation in the arm is normal, as well as that of the internal cutaneous nerve. In the radial area on the back of the thumb and first and second fingers touch is referred correctly, and is everywhere felt; but throughout this region every touch is felt as both touch and pain. In a less degree this is true of certain parts of the whole arm, and most notably of parts just around the scar of the operation on the musculo-spiral. The ulnar territory is in all respects healthy by compass points. The sensitiveness of the thenar eminence is not acute, but increases as we approach the index-finger. The hyperalgesia is exquisite in the face of the second

finger, and the radial side of the third finger; on the face of the thumb and the palm; over the first joint of the index. In these regions touch is so much more distinctively felt as pain that the degree of health of the power of touch cannot be thoroughly studied. The over-sensitiveness is worst in parts of the median and radial territory of the hand, better in the external cutaneous branches of the musculo-spiral, and normal in the ulnar and internal cutaneous.

The great nerve tracks are tender upon deep pressure, which, over the median and musculo-spiral above the scar, causes increased pain in the hand. The axillary and brachial plexus are also tender, as well as the three upper cervical vertebræ. At times the surface of the right chest is sore, and also the teeth of the right side of both jaws, the teeth being themselves sound.

Secretions.—The median palm sweats incessantly, and the odour of the perspiration is very acid and heavy.

Nutrition.—The measurements of the two arms are as follows:—

Left forearm	8 $\frac{3}{4}$ inches
Right "	8 "
Left arm biceps	9 $\frac{5}{8}$ "
Right "	8 "

There is at this date no especial wasting of any of the forearm muscles, and no remarkable want of muscular tone. The interosseal groups are not wasted.

The two little finger nails are normal and alike, the second finger and thumb nails on the right hand are curved laterally, that is, singularly arched. The right index nail is $\frac{5}{16}$ inch broad, that of the left $\frac{7}{16}$ inch. She thinks there has been no difference in the rate of growth. The general tint of the right hand is livid, and the arm is liable to sudden alternations of feeling as to temperature, while the slightest irritation causes at first intense paleness followed by definitely limited islands of deeply flushed skin. The skin of the thumb and index-finger is rough, ragged, and marked with yellowish patches of loosened epithelium.

Temperature.—I made, at this time, an effort to ascertain the temperature of the affected parts, but totally failed, owing to the sensitiveness of the surface being such as to forbid the mere touch of the instruments.

Galvanism.—The forearm and hand muscles all reacted rather feebly under induced currents, but this was possibly due in some degree to long inaction, and she could not endure a severe use of the battery. The effects of galvanism were most interesting, and such as at first to induce me to believe that the constant current might prove of curative value. A current of at least ten cells in either direction along the track of the median nerve rendered the fingers nearly altogether free from over-sensitiveness, and enabled me, while the current passed, to ascertain that the sense of touch in these parts was but slightly impaired. This experiment was made again and again with the same result, and satisfied me that the nerve could not be very gravely altered. I am not aware of any like observation elsewhere recorded. I may add that the influence was limited to the median, and that continued galvanic treatment failed to relieve, except at the moment, and this is in accordance with all my former experience of traumatic neuralgia.

A long and careful study at last satisfied me that the cause of trouble lay in the disordered filaments of the median nerve in the hand, and that the effects exterior to this part were probably due to disturbances of the sensorium, propagated from the hand and resulting in associated neuralgias,

such as are commonly but inaptly termed reflex. One question remained to be answered, How far up the median nerve had the organic changes travelled To this I could give no positive reply, since the whole nerve was tender, and there might possibly be a sclerotic condition of the entire nerve up to its spinal origin; but in this case I should have expected to find the muscles less sensitive to induced currents and the tactile sense greatly disturbed, which was not the case; I therefore determined to take the risk and divide the median nerve. At this stage Dr Brinton saw the case, and, in consultation with Dr. Keen, we determined to operate on the forearm below the point at which the motor filaments are given off to the forearm muscles. The only loss would thus be the sensibility of the median territory in the hand and the mobility of certain thumb and interosseal muscles. I add here Dr. Brinton's account of the operation, which was done by him with the assistance of Drs. W. W. Keen and Wharton Sinkler.

"March 2d, 1873, I first ascertained precisely the margins of the flexor carpi radialis and palmaris longus muscles by extending the hand upon the forearm. I then made an oblique incision $2\frac{1}{2}$ inches long, from over the border of the first to that of the last-named muscle; the lower end of this incision terminated two inches above the line of the wrist-joint.

"The superficial fascia and the muscular aponeurosis were next divided on a director in the line of the cut. The tendinous edge of the radial flexor and the narrow tendon of the palmaris were thus exposed to view. I then sought for the median nerve in the inter-muscular space, and uncovered it at the lower end of the cut, just at the point at which it emerges from beneath the oblique fleshy fibres of the flexor sublimis digitorum; with the end of the finger this muscle was then raised from its bed (without laceration of its fibres) as high as the upper end of the incision. The median nerve was thus completely exposed for an extent of $2\frac{1}{2}$ inches.

"It was decided by Dr. Mitchell that the removal of three-quarters of an inch of the nerve would be sufficient for the object of the operation; and this length of nerve was accordingly excised with the scissors. It was at the same time suggested, that, to diminish the probabilities of reunion of the divided nerve ends by fresh nerve development, the lower exposed end of the nerve trunks should be turned in a transverse direction into the surrounding tissues and there fixed. This was accordingly done, the nerve end being retained in its new position by a wire suture, which was removed at the expiration of forty-eight hours.

"The portion of nerve thus excised commenced below the origin of the muscular and anterior interosseous branches, and terminated above the origin of the palmar cutaneous branch. There was no bleeding; and no ligatures were required. The wound healed in about ten days."

The nerve ends retracted at once to such an extent that, although but three-quarters of an inch were taken away, the separation was found to be an inch and a half, and this became fully two inches and a quarter, when, at my suggestion, the lower end of the nerve was doubled on itself. The nerve looked healthy; and the piece put in Muller's fluid was studied within a few hours by Dr. Bertolet, whose statement I append. A hypodermic injection of morphia was given; this drug caused alarming prostration, while chloral produced the wildest excitement. The wound was painful; and on the third day, in this, as in Dr. Sapolini's operation,

erysipelas came on. It involved the lips of the wound first and thence journeyed to the finger tips and up the arm and over the right side of the chest. During this period of eight days I tried and gave up in turn many forms of narcotics. From this time the case progressed favourably, needing no treatment save tonics and a bountiful diet. A few hours after the operation I made an examination of the limb as well as the pain in it permitted, and found that the palmar face of the thumb and index were insensible, and could be touched without any annoyance, but hyperæsthesia still existed in the radial territory. On the sixth day there were acute pains in the index and thumb, due, I suppose, to the changes in the centric end of the cut nerve. On the sixteenth the hand and arm admitted of a careful study, and we found the following condition:—

Motion.—The relief from pain enabled her to move all the muscles save those damaged by the section of the nerve. The flexor tendons tied fast by the cicatrization of the wound, yielded to carefully conducted passive motion, and we shortly learned that the extensors and flexors were in nearly equally good order, but that in the thumb and index there were subacute joint lesions, which promised for a time to limit the range of motion. The section of the median nerve disturbed no muscles save those of the thenar eminence and the median interosseal groups; but as one of the short adductors of the thumb is fed by the ulnar nerve, there yet remained the power to approximate the thumb and fingers

Sensation was absolutely lost for *touch* and *pain* on the palmar face of the thumb, index, and up to an irregular line on the radial side of the centre of the same face of the third finger. It was not lost on the palm though slightly lessened, but was absent on a part of the dorsal ends of the second and third fingers. Beyond these regions, as I shall further describe, touch was dulled over a much wider range. The area of absolute loss of feeling is seen at a glance in the accompanying diagram. It was traced again and again with the most sedulous care, and each time recorded on diagrams which were found to agree. With no less care I studied the sensory condition of the radial region. At first it presented the hyperæsthesia which had never left it since eight days after the operation on the musculo-spiral, but from the date of section of the median this very rapidly lessened, and within a month was but trifling. The sense of touch in this region was perfect.

The associated neuralgias and the tenderness of the nerves faded with equal rapidity, and thus within ten days, except the relics of radial sensitiveness, there was absolute freedom from every form of pain.

Nutrition.—The acneous eruption passed away with the pain, and a marked and steady change for the better took place in the colour and vascular state of the limb.

All the nails of both hands were stained on the day of the nerve section. Those of the left grew steadily at the rate of about 1 mm. a week. *None* of the nails on the right hand grew until the 14th day, when all grew at equal rates.

Temperature.—The sensitiveness before the operation, and the erysipelas after it, unfortunately interfered with my earlier thermal studies.

14th day. No erysipelas, wound healed.

10 A.M.	Right median region	.	.	.	.	.	.	96.5
	Left " "	.	.	.	.	.	.	91.5
9 P.M.	Right " "	.	.	.	.	.	.	96.4
	Left " "	.	.	.	.	.	.	92.5

16th day. Erysipelas again appeared on the right shoulder, but faded in two or three days after a fevered and restless night.

Right median thumb	92.4
Left " "	95.3

19th day. Patient well.

5 P.M. on 1st joint of index ; Right median nerve region .	97.6
Left " " " .	94.

23d day.

Ball of thumb ; Right median nerve region.	93
Left " " "	92
Right index	93.5
Left "	90

A few days later I awakened a subacute arthritis in the metacarpophalangeal articulation of the right forefinger by making too extreme movement. The trouble proved obstinate, and exacted long rest on a splint with repeated counter-irritation by strong solutions of nitrate of silver; but this was the sole drawback, and ever since the hand has continued to improve in motion, while there remains the most absolute freedom from pain.

On the 20th Nov. 1873, ten months after the operation, Miss T. came to Philadelphia again, and gave me a chance to study the peculiarities of her condition at this time.

The forearm muscles *all* responded readily to moderate faradic currents. The essential thumb muscles in the thenar eminence moved under no form of electric stimulus, faradic or galvanic, save the short ulnar adductor, which being fed by the ulnar nerve responded to both currents. The ulnar interossei acted well; the median hand muscles of like groups did not respond to any electric irritation.

Sensation.—The study of the sensations proved very interesting. I give the simple details, reserving my comments.

The diagrams of lost touch and pain, made within a month after the section, remain much the same, except that on the median side of the third finger, first and half of second phalanx, touch can now be dully felt. The area of the palm in which touch was marked as lessened, is much as at that date; perhaps has somewhat bettered.

The dorsal regions of lost pain and touch remain as in the diagram, except that on the outside of the thumb there seems to have been some gain.

The ulnar half of the third finger palmar face feels light touch throughout, and correctly refers it, but is incapable of discerning as two the compass points at any distance apart. To my surprise the radial half of the fourth finger, though feeling a touch everywhere, is also unable to discern compass points as two at any distance apart. The ulnar side of the palmar face of this finger is more sensitive near the end; last phalanx the points are felt as two at $\frac{3}{8}$ of an inch apart; on the sound side as two at $\frac{1}{8}$ of an inch asunder. The fifth finger gives the same response on both sides of the body, but the patient insists that there is a difference in feeling in favour of the sound side.

There is absolute freedom from pain.

The nails grow alike. The thumb muscles are atrophied.

Remarks.—The trouble in this case began when the point where the splinter lay was struck. It is difficult to say what was the nature of the process then set up, but it was certainly irritative in character, and was

suddenly made worse by the operation in which the foreign body was removed. The hyperæsthesia and burning pain, and the contraction of the fingers make it probable that the trouble was inflammatory. The after-consequences were most interesting and instructive. The phenomena of pain and hyperalgesia, at first limited to the median nerve, as usual began to bring about in the sensorium a state of morbid irritability in closely related groups of ganglionic nerve cells, so that the musculo-spiral was next affected, and this, as I have said, through the sensorium; next other centres felt the same influence, and the irritative radiations inward from the diseased median so morbidly altered other and remoter sensation centres, as to cause these also to express pain, and thus to give rise to associated neuralgias of the shoulder, neck, face, and leg, the influence being throughout purely unilateral. When the nerve was divided, the centres were at once relieved from this steady afflux of morbid impressions, and rapidly regained their healthy states, with the exception of those from which arises the musculo-spiral nerve, the radial filaments of which still remain slightly over-sensitive, but are also improving.

In many cases I have traced these associated sensations to a passage upwards of the condition of neuritis or sclerosis, which came at last to invade other nerves of the parent plexus. At present, I believe that I should incline to charge a greater number of these secondary neuralgic and other changes to this singular condition of the centres of sensation, which, under the influence of constant irritation, propagates, from one set of ganglia to another, a growing tendency to evolve pain and other phenomena in the nutritive sphere. We have thus developed at last in the sensory centres a state which elsewhere I have described as being the exact analogue of what strychnia causes in the motor centres. Given such a state of things, and the sensory centres not only feel as pain influences which are not usually productive of pain, but also within themselves originate, as it were spontaneously without new irritations from without, the condition called pain. As yet we know of no drug which can bring about this state of the sensory ganglia, as strychnia causes a like state of the motor organs.

The ease for a time given in all the nerve regions involved by Dr. Sapolini's section of the musculo-spiral must, as I think, have been due to some influence which it exerted on and through the related groups of nerve centres.

In facial neuralgias not traumatic, I have frequently observed that the fits of pain in the infra-orbital could be temporarily bettered or checked by pressing upon the supra-orbital, or that pain in the infra-maxillary could be controlled by hard pressure on the supra-orbital. Sometimes, as I saw to-day in a neuralgia of the jaw in a toothless man, the slightest pressure anywhere on the gum will relieve the pain which talking or swallowing evolves. A sudden impression thus made at any point more remote might

effect a like object. Thus, I am sure that I have seen pain in the brow disappear for days on the removal of a sound tooth, which was not really the agent in creating the pain, and I am disposed to explain thus many of the reliefs or cures of neuralgia by pulling teeth.

Section of the musculo-spiral is said, by Dr. Sapolini, not to have destroyed the sense of touch or pain anywhere in the radial territory of the hand, and if the patient and the operator were not deceived, this is to be attributed to the remarkable manner in which the nerves run over into the territories of their neighbours, and possibly to some variation in the normal supply. The part in question remained unaffected as to feeling by section of the median, so that the repair made *ad interim* must have been very complete.

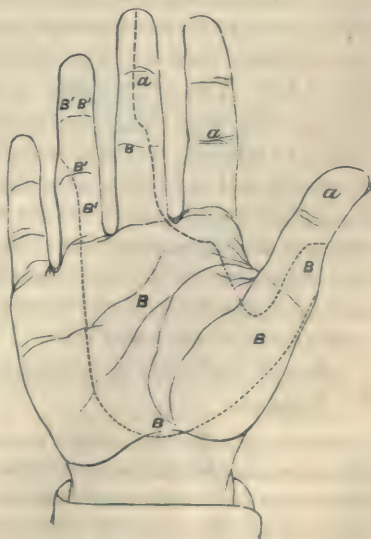
The usual muscular distribution of the radial to the extensors certainly suffered, but as there is to-day full power, and as the early and marked atrophy has passed away, I conclude that the lost inch of the musculo-spiral has been restored most remarkably. Errors as to sensation may readily be made, but surely none could be as to the palsy and atrophy of the extensors, while also it is well to remember, that although the hand nerves run over, as it were, into one another's territories, the muscles are more constantly supplied by single nerves, and have a far less irregular distribution.

In studying the areas of lost sensation in this most valuable case, I shall first consider the case of touch. Fourteen days after the operation it was as shown in Diagrams 1 and 2. In November, 1873, it had changed but

Fig. 1.



Fig. 2.



a. Pain and touch lost. B. Touch lessened. B'. Touch slightly lessened.

little on the dorsal aspect, while on the palmar face it had altered somewhat, so that, in certain portions of the thumb and third finger, a touch was felt in November where in February it was not.

Perhaps it may be said that the local shock may have been the partial cause of the more complete loss in February, but the change was slight. Something may be due to the greater attention paid to the region of dulled sensation, owing to which the sensorium became trained up to the perception of impressions which at a former period could not be felt at all. The loss of touch and pain was entire in the regions marked.

In a part of the palm, as indicated, pain was not notably less, and touch was slightly lessened, as measured by compass, for in all of the palm marked B, the lightest impact was felt. So also of the touch in the third digit, ulnar side, and all of the face of the fourth. These facts are of interest because the region of the greatest loss, dorsal and palmar, by no means corresponds to the anatomical descriptions and drawings, which either allow us to suppose the distribution to be symmetrical, or delineate it in diagrammatic lines which do not correspond either to the results in this case or in others. The innervation beyond the radial side of the third finger is also seen to be disproportionately small.

In Miss T.'s case there is, too, some loss of function in the ulnar side of the fourth finger for which we are hardly prepared by the usual descriptions.

I had hoped to learn, from this case, whether nail growth is checked by nerve section. Unluckily the facts prove too much, since neither in the ulnar, radial, nor median territories did they grow for some time. Moreover, the presence of erysipelas may have influenced the nail growth.

As to thermal conditions, the laboratory and the clinic have seemed to be at variance. In my recent book I pointed out the fact that the physiological nerve-sections show a rise of temperature, and that the surgical sections show a fall. I also stated that this was probably due to the surgeon's not having made early studies of temperature and to those of the laboratory having immediately followed nerve division. I ventured to predict that the heat would be found to rise after clinical section, and to fall when some weeks had elapsed. This was the case in Miss T., although in the text I have not stated the latter fact. The heat rose remarkably, and continued high with some variations for a month. When I saw her anew, after ten months, it had fallen in the thumb and forefinger two degrees below the temperature of the sound side.

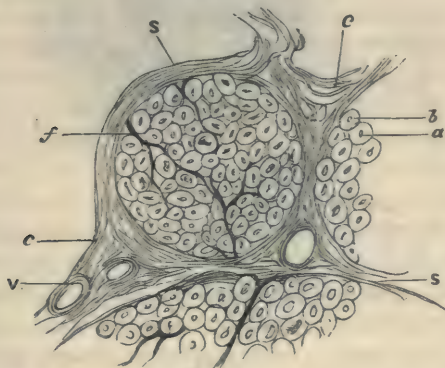
I append the notes of microscopic appearances kindly made for me by Dr. Bertolet.

Macroscopically, the excised portion of median nerve did not present any alterations beyond the loss of the usual pearly-white or glistening appearance. The connective tissue surrounding the nerve did not seem to the naked eye to be materially increased or hardened, the nerve-cord remaining soft and pliable. The nerve was hardened for section by being allowed to remain for several

weeks in a dilute solution of chromic acid. The whole nerve was then imbedded in wax, and transverse cuts made; these were then stained in Tiersch's neutral carmine solution; the water was then abstracted by placing the cuts successively in alcohol and absolute alcohol. They were finally rendered transparent in the oil of cloves, and permanently mounted in Damar varnish.

For the sake of comparison and in order that the description of the alterations presented might be readily understood, we have given in Fig. 3 the micro-

Fig. 3.



Cross-cut of Fasciculi of a Normal Radial Nerve.—*a.* Dark spot representing the axis-cylinder surrounded by the hyaline mass or white substance of Schwann. *b.* Medullary sheath or membrane of Schwann. *s.* Sheaths of the secondary fasciculi. *f.* Trabeculae of connective tissue subdividing the fasciculus. *c.* Loose connective tissues in which are seen, *v.* sections of the bloodvessels.

scopic appearances presented by a normal radial nerve in the cross-cut when prepared precisely by the same method. In the cross-section each individual nerve-fibre exhibits an external ring with double contour, the cut edge of the medullary sheath, nearly in the centre of each circle is seen a dark spot, which is readily stained by carmine; this constitutes the axis-cylinder. The space between the axis-cylinder and the outer circle is filled up with a hyaline mass, known as myeline or the white substance of Schwann. Septa of connective tissue, as shown in the figure, stretch inwards from the investing sheath or neurilemma of the nerve-trunk and divide it into a greater or less number of secondary nerve-bundles or fasciculi. In the cross-section these septa are seen as thick rings, which are united among themselves by more or less loose connective tissue *c*; in the latter are seen coursing the bloodvessels supplying the nerve *d*. The fasciculi are further subdivided by delicate fibres or trabeculae of connective tissue which spring from the sheaths of the secondary fasciculi

Fig. 4 represents the microscopic appearances presented by the cross-cut of the excised median nerve; the same magnifying powers (180 diameters) being employed as in the preceding figure. It will be seen that the connective tissue of the sheathing of the fasciculi as well as the interfascicular trabeculae are slightly increased in thickness and quantity, though not to that degree which marks the hypertrophy attending chronic neuritis. The sheaths of the fasciculi have no longer the distinct fibrillated appearance of the first prepa-

ration, but merge into the connective tissue in the vacuity. The individual nerve-fibres themselves, however, present the principal changes. In very few of the rings of the secondary fasciculi, even with the higher powers (*vide* Fig. 5),

Fig. 4.

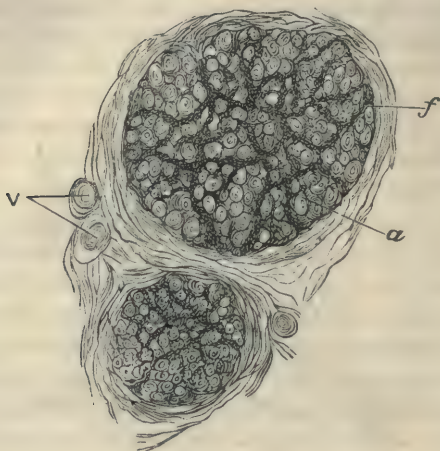
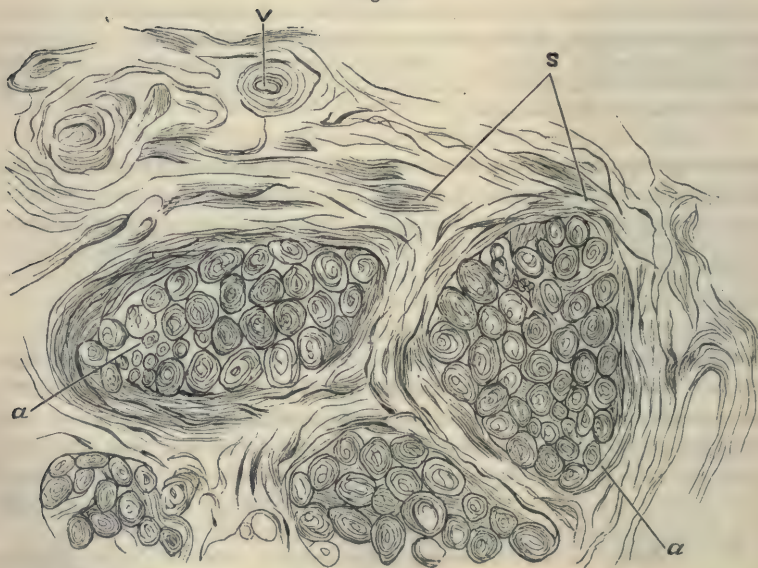


Fig. 5.



FIGS. 4 AND 5. *Cross-cut of Fasciculi of the Median Nerve, exhibiting the Lesions of the Wallerian Degeneration.*—*a.* Confused outlines of the nerve-fibres, concentric arrangement within the circles; scarcely any axis-cylinder to be seen. *s.* Sheaths of the fasciculi. *f.* Trabeculæ of connective tissue, moderately thickened. *v.* Bloodvessels, unaltered.

can the axis-cylinder be satisfactorily recognized, nor is it stained by the carmine. The circles of the individual nerve-fibres are no longer clearly de-

fined; they are seen as a confused mass of concentric rings. The myeline is more highly refractive than usual; fresh sections of the nerve, made shortly after its removal, afford a decided play of colours under the polariscope; this property, however, has been destroyed by the process of hardening and mounting employed. Longitudinal sections of the altered nerve revealed a slight increase of the nuclei in the sheaths of Schwann; the latter were no longer homogeneous, but granular and coarsely striated.

The lesions presented in this specimen are those known as Wallerian degeneration; the disintegration and atrophy occurring primarily in the nerve-fibres themselves, while in chronic hyperplastic neuritis the disintegration and atrophy result from the pathological changes occurring primarily in connective tissue framework supporting the nerve-fibres.

ART. II.—*Case of Exsection of the Brachial Plexus of Nerves for the Relief of Painful Neuroma of the Skin.* By F. F. MAURY, M.D., Surgeon to the Philadelphia Hospital, and LOUIS A. DUHRING, M.D., Clinical Lecturer upon Diseases of the Skin in the University of Pennsylvania. (With a wood-cut.)

UNDER the name of Painful Neuroma of the Skin, one of us (Dr. Duhring) reported in this Journal for October, 1873, a case remarkable for its many peculiarities. In that report the subject was discussed from a dermatological point of view only; in the present communication the question will be considered in its surgical aspect, as to the means of affording relief to the excruciating sufferings of the patient.

When first described, the case was deemed to be a unique example of disease, and, after further investigation, there appears to be no reason to question the accuracy of that belief. It seems to stand alone in literature, with its distinctive symptoms, apart from all other cases to which, at first glance, it might be likened. To thoroughly comprehend the affection it is essential that its whole course be carefully investigated in all its details; for, without accurate study of the various symptoms, viewed subjectively as well as objectively, it is impossible to arrive at a just appreciation of its nature. In the number of this Journal just referred to will be found an accurate representation of the disease, as well as certain statements which should be borne in mind.

In addition to the remedies already stated to have been tried, electricity and galvanism have been used perseveringly with no perceptible amelioration of the symptoms. Quinia has also been administered, both in tonic as well as in larger anti-periodic doses, without benefit. Preparations of iron and arsenic, various quantities of the bromide and iodide of potassium, all have been administered in turn without effect.

The signal failure of all remedies, both constitutional and topical, led to the consideration of the propriety of resorting to a surgical operation for the relief of the unbearable suffering which the patient endured. It was thought that by this means only was there a chance of affording any relief. The question presented itself: What operation could be performed with this end in view? It will be remembered that the area of suffering extended over the shoulder, radiating to a certain extent to the integument of the thorax anteriorly, and posteriorly to the scapular region, and down the entire arm, the central seat of pain being upon the arm at a point corresponding to the insertion of the deltoid muscle. It will be seen that a very large tract of surface was thus involved. After a careful study of the distribution of nerves to these regions, in which Dr. S. Weir Mitchell rendered valuable assistance, it was evident that to afford the best chance of subsequent immunity from suffering, it would be necessary to divide the entire brachial plexus of nerves; or better, to exsect a sufficient portion of nerve tissue to preclude any likelihood of reunion. It will be recalled to memory that the fourth, fifth, sixth, seventh, and eighth cervical nerves, together with the first dorsal, combine to form the plexus, these uniting by two main trunks or cords. During this investigation it was also found that the third cervical nerve supplied a portion of the integument of the neck and shoulder posteriorly; but it was seen to be entirely impracticable to divide this nerve by the same operation that would reach the brachial plexus at its most eligible and desirable point. It may be mentioned here that the only recorded case for which any operation has been instituted for a kindred, but not like disease, is that of Drs. Sands and Seguin, of New York, carefully reported in the *Archives of Scientific and Practical Medicine*, No. 1, 1873. The operation in this case, however, was done for a traumatic neuritis.

The free consent of the patient was obtained, after a clear and truthful statement of the risks and dangers had been made, and the operation determined upon.

On the 25th October, 1873, the patient was placed under careful surveillance, and the following notes recorded:—

7 A. M. Patient had three paroxysms during the night, and one after dressing this morning. They each continued from ten to fifteen minutes.
5 P. M. Has had six paroxysms since this morning's note, two of which lasted thirty minutes, two fifteen minutes, and the remaining two eight and ten minutes. Patient is fearful that the proposed operation will be of no benefit to him; nevertheless, is willing to risk death rather than continue to suffer.

26th, 8 A. M. Had three paroxysms through the night, one of which was very severe, and continued one hour; the others lasted each twenty minutes. 5½ P. M. Had two paroxysms to-day, fifteen and thirty minutes in duration.

27th, 8 A. M. Had two paroxysms during the night, and one this morning, of about fifteen minutes.

28th, 8 A. M. Five attacks of pain since last note, two of which, the patient states, were the most severe he has ever endured.

29th, 8 A. M. The day appointed for the operation. Five paroxysms since yesterday, three of which were very severe. 11 A. M. Is prepared for the operation. Is calm and in good spirits, thinking only of the pain that he may suffer after the operation. Has had two paroxysms within the last three hours.

The operation was performed by Dr. F. F. Maury, assisted by Drs. W. H. Pancoast, J. H. Brinton, and S. W. Mitchell, in the amphitheatre of the Philadelphia Hospital in the presence of the clinical class.

The patient having been thoroughly anæsthetized with ether, the following steps may be noted: The shoulders were well elevated, and the head allowed to drop backward with the face strongly inclined to the sound side, the integument of the neck of the affected side being thereby rendered tense. This is a point of importance, causing the sterno-cleido-mastoid muscle to be prominently displayed. It is, moreover, especially desirable that the posterior border of this muscle be clearly defined as a landmark for the first incision. The next important step consisted in rendering prominent the course of the external jugular vein, which commences in the substance of the parotid gland, upon a level with the angle of the lower jaw, and runs perpendicularly down the neck in the direction of a line drawn from the angle of the jaw to the middle of the clavicle. The finger of an assistant pressed immediately above the last-named point rendered this vein distended. The incision was L shaped, with the long arm extending along the posterior border of the sterno-cleido-mastoid muscle, beginning three inches above the clavicle; the short arm following the course of the collar bone, as in the operation for the ligation of the subclavian artery. The length of both skin incisions is to be regulated by the size of the neck of the patient. The knife was carefully guided, so that it divided only the skin, under which conspicuously appeared the external jugular vein; this was pulled aside by the finger. The handle of the knife and the finger were then used to tear and separate the fascia in searching for the tendon of the omo-hyoid muscle, the next important guide. Immediately underneath the posterior belly of the omo-hyoid muscle, which it was not necessary to cut, being readily held aside by the finger or a blunt hook, were found the two cords of the brachial plexus. The outer or upper cord, composed of a fasciculus from the fourth, with the fifth, sixth, and seventh cervical nerves, was elevated by means of a curved aneurism needle armed with a silk ligature; the needle was withdrawn, the ligature left and loosely tied around the cord, was given to an assistant. The index-finger of the left hand was then placed in the wound, and the exact position of the subclavian artery ascertained; it was found, and held well out of the way and carefully protected. The trunk was next divided with blunt-pointed scissors, as near the finger of the left hand as possible, which was effected without difficulty.

Another division was made above the point of the ligature as far up as practicable, care being taken not to interfere with the scalenus anticus muscle, across the body of which passes the phrenic nerve, which was not seen. By this means four-fifths of an inch of nerve substance, carefully measured *immediately* after exsection, was removed, and the marked retraction of the cut ends gave a space two and a quarter inches from each extremity. The inner cord was then sought for and found directly underlying the outer; this cord, it will be borne in mind, is composed of the eighth cervical and first dorsal nerves. It was secured by needle and

ligature in the manner already mentioned, and the same amount of nerve exsected. Even greater care should be observed here in the protection of the subclavian artery, as it lies in immediate proximity with the inner cord. No vessels were divided, not even the transversalis colli, it being held carefully aside with the posterior belly of the omo-hyoid. The operation was therefore bloodless; no ligature was required.

The operation occupied one hour and a quarter, from the time of commencing etherization to the dressing of the wound. The incision was brought together, and covered with a pledget of oakum soaked with olive oil. The finger nails of both hands were stained with nitric acid, for the purpose of noting the growth of the nails. 5 P. M. Patient still more or less under the influence of the anæsthetic. The arm is completely paralyzed, and is without pain. 10½ P. M. Has had no pain since operation; is restless. One-fourth of a grain morphia given hypodermically.

30th, 7 A. M. Rested well through the night. Suffers no pain of any kind. 7 P. M. Has been comfortable through the day, and has eaten heartily. Ordered xl grs. bromide of potassium.

31st, 7 A. M. Slept well through the night until four o'clock, when he awoke and shortly after experienced a slight paroxysm of pain on the *top of shoulder*. It lasted five minutes, and was similar in character to the old pain. 4 P. M. Has been free from pain during the day; feels comfortable.

Nov. 1, 7 A. M. Just after getting asleep last night, he was awakened with pain about the top of the shoulder; it lasted fifteen minutes. Had slight pain an hour ago.

2d, 8 A. M. Did not sleep well; had a ringing sensation in his head. Complains of a tingling sensation in his arm. Slight paroxysm this morning. Wound of neck somewhat reddish.

3d, 7 A. M. Restless last evening; was ordered xxx grs. brom. pot., with ¼ gr. morphia. Was annoyed with pain three times during the night, but the attacks were light.

4th, 8 A. M. Rested well all night. While dressing this morning a paroxysm came on.

5th, 8 A. M. Had pain during the early part of the night, but slept comfortably during the night. Slight paroxysm while dressing wound. Stitches removed. Wound has united by first intention.

6th, 7 A. M. One very light paroxysm through the night.

7th, 7 A. M. Slept comfortably. One short attack of pain an hour ago.

8th, 7 A. M. Had one paroxysm during the night. It may here be observed that all the pain has been seated about the top of the shoulder.

11th. Still complains of the tingling sensation in the arm.

17th. Has been doing quite well, but has had one or two slight paroxysms during the twenty-four hours. The appetite is good, and he sleeps well. The finger nails have not grown at all upon the left hand (side of disease and operation), while on right hand they have grown an eighth of an inch. Strong tincture of aconite root was ordered to be applied as a continual dressing to the top of the shoulder.

24th. No relief has been obtained from the tincture.

29th. Is in good general health and spirits. Still continues to have one or two slight paroxysms through the day. The left forearm has been somewhat cedematous for several days past. It has been rubbed with an ammonia liniment, the unpleasant numbness and tingling in the part being greatly relieved by this means.

April 29, 1874. Since the foregoing notes were recorded, now five months, the patient has been under constant observation. During the month of January, a carbolic acid dressing, consisting of one part of the acid to three of glycerin, was applied to the painful shoulder. Vesication was produced, but without affording any relief.

May 12th. Within the past twenty-four hours the patient has experienced one paroxysm, which came upon him without apparent cause. He has also suffered four very slight attacks, all of them produced by external causes, as a draft of air, movement, nervous excitement, and the like.

13th. A repetition of yesterday's symptoms exactly.

The following table exhibits, in a condensed form, the state of the pulse and the temperature of the body before and after the operation. The temperatures were taken with great care, the portion of the bulb of the thermometer not in contact with the skin being surrounded and protected from the air by a piece of scooped out cork. The thermometer was allowed to remain in position from ten to fifteen minutes.

"Pulse and Temperature," degrees Fahr. before Operation.

		Pulse.	Temperature.				
			Left axilla.	Right axilla.	Left palm.	Right palm.	Surface of left shoulder.
1873.							
Oct.	25th, 7 A. M.	68	98 $\frac{1}{2}$	98 $\frac{1}{2}$	96		
"	25th, 5 P. M.	80	97 $\frac{1}{2}$	97 $\frac{1}{2}$	94		
"	26th, 8 A. M.	70	98	98	95		
"	27th, 8 A. M.	76	98 $\frac{3}{4}$	98 $\frac{3}{4}$	95		
"	28th, 8 A. M.	80	97 $\frac{1}{2}$	97 $\frac{1}{2}$	94		
"	29th, 8 A. M.	80	97 $\frac{1}{2}$	97 $\frac{1}{2}$	94	94 $\frac{2}{3}$	
After operation.							
Oct.	29th, 5 P. M.	80	100 $\frac{2}{3}$	98	99	91	
"	29th, 10 P. M.	88	101	100	100	97	
"	30th, 7 A. M.	92	99 $\frac{1}{2}$	98	98 $\frac{1}{2}$	98	
"	30th, 7 P. M.	80	100	99 $\frac{3}{4}$	99	98 $\frac{3}{4}$	
"	31st, 6 A. M.	76	98 $\frac{1}{2}$	97	97 $\frac{1}{2}$	96 $\frac{1}{2}$	
"	31st, 4 P. M.	80	99 $\frac{1}{2}$	98	99	98 $\frac{1}{2}$	
Nov.	1st, 7 A. M.	76	98	97	97	96 $\frac{1}{2}$	
"	1st, 5 P. M.	80	99 $\frac{1}{2}$	98	98 $\frac{1}{2}$	96 $\frac{1}{2}$	
"	2d, 8 P. M.	80	99	98	97	97	
"	3d, 7 A. M.	84	98 $\frac{1}{2}$	97	97	96 $\frac{1}{2}$	
"	5th, 7 A. M.	76	97 $\frac{1}{2}$	97	96 $\frac{2}{3}$	96 $\frac{2}{3}$	
"	6th, 7 A. M.	72	98	97	97	96 $\frac{2}{3}$	
"	9th, 7 A. M.	80	97 $\frac{2}{3}$	97 $\frac{1}{2}$	97	96 $\frac{1}{2}$	
1874.							
April	29th,	96	99 $\frac{1}{2}$	99 $\frac{1}{2}$	94 $\frac{1}{2}$	99 $\frac{1}{2}$	
May	2d,	...	...	95	92	
"	3d,	...	...	97	87 $\frac{1}{2}$	

The thermal observations here given settle conclusively the mooted points as to the effect in man of nerve sections on temperature. They coincide

strikingly with the results obtained by Dr. Weir Mitchell in a case of section of median nerve (see present No. of this Journal), and again fulfil the prediction made on this subject by the above-named author.¹

Before the operation and section in our own case, the left palmar temperature ranged from 94° to 96° F. It rose within three or four hours after the section to 99° F.; at 10 P. M. it was 100° , and up to Nov. 9th was never, save once, as low as $96\frac{2}{5}^{\circ}$, being usually a degree or more above that of the right palm. When again in April the temperature was taken it was, at 8 P. M., after a period of some pain and re-excitement; left palm $94\frac{1}{4}^{\circ}$; right palm $99\frac{4}{5}^{\circ}$. Upon May 2d it was even lower; left palm $92\frac{1}{4}^{\circ}$; right palm $95\frac{3}{4}^{\circ}$; and the following day the left palm was only $87\frac{3}{4}^{\circ}$; the right do., being $97\frac{1}{4}$.

The result of the operation may be summed up as follows: Our patient suffers but one painful paroxysm, and some four slight attacks of pain, in the course of the twenty-four hours. This statement may be received as an average of his sufferings since the operation, and the symptoms appear to be neither abating nor increasing at the present time. The general health is excellent. As a rule he sleeps quite comfortably through the night, now and then awaking from an attack of pain.

The muscles of the shoulder are conspicuously wasted, that of the deltoid being most notable, so that the head of the humerus has dropped at least an inch out of the glenoid cavity. The great and general œdema of the whole limb masks the lower atrophies in the forearm; but on removing the œdema by a bandage the muscle-losses become plain, as well as the bone-like hardness of their contracting tissues.

For two days after the operation an induced current of full power moved all the forearm muscles, but this capacity to respond declined by degrees, and at the fourth day a powerful galvanic current, interrupted and reversed, was needed to show them. The downward current acted best. April 29, no severity of any form of current moved the muscles, nor did they stir when galvanized through needles passed into their substance (75 cells), interrupted and reversed current.

The skin of the arm and forearm is very dry and desquamates slightly. The fingers of the hand are all contracted, more or less, the third, fourth, and fifth most, partly owing to an old injury, but chiefly following the operation. The skin of the hand, especially about the knuckles, is reddish and smooth, accompanied with desquamation of the epidermis. There is marked incurvation of the nails on both sides (turtle-back nails), but especially on the left side, where they are very greatly curved. The difference in the growth of the nails is still very evident from the old staining; it is a difference of at least one-half.

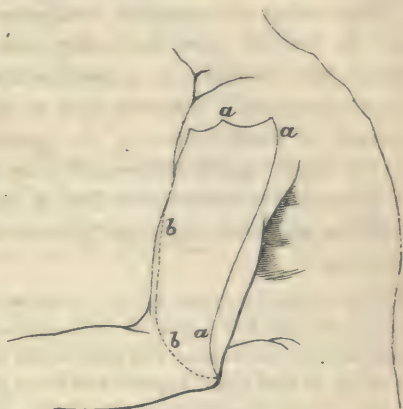
As regards the appearance of the skin of the shoulder, and the nodules

¹ Injuries to Nerves, p. 177.

upon it, there is little change to note since the operation. It still retains its characteristics as described in connection with the history of the case, without any decided appreciable alteration.

A careful study was made by Dr. Perry, the hospital resident, of the region of lost sensation; and in April, Dr. Weir Mitchell and one of us (Dr. Duhring) repeated this examination, with no notably different results.

Touch and pain, as tested by needle points, were absent in a region of skin which included all of the forearm and hand and face of the arm, bounded by an irregular line on the two sides, and above, on the front of the shoulder, by a still more irregular limit. The whole back and inner surface of the arm to the elbow was sensitive to touch and to the needle; but more so above than below. Even in the anterior arm space, where the needle entered painlessly, there were here and there regions in



The line *a, a, a*, on the outer surface of the arm, marks the boundary above and outside of which sensation is preserved. The dotted line *b, b*, marks the same for the inner surface of the arm.

which distinct and well-localized pain was felt when Dr. Mitchell inserted needle points into the dermis, and transmitted through them the current of 50 to 75 Collat. cells. The wire brush on the dry skin yielded us no signs of feeling. The diagram gives an idea of the limiting lines which bound the areas of lost or lessened feeling.

No new tubercles have appeared on the arm, though several small new ones are observed upon the back, about the scapular region; they are the size of split peas, and as yet are only painful upon pressure.

When we consider then the state of our patient before the operation, and his present condition, there is every reason to feel gratified with the result; for although the suffering has not been completely removed, the relief afforded has been so great and so decided as to admit of no question. The patient himself bears frequent and willing testimony upon this point, stating that he is well satisfied with the success of the operation, and thankful for the ease obtained. He is now able to live in at least comparative comfort, whereas before he was in continuous pain, and this of so grievous a character as to be almost intolerable. The complete paralysis of the arm is of little moment to the patient, and is scarcely worthy of consideration in comparison to his previous sufferings; for the limb had not only to be guarded, but preserved as free from all movement as possible, the least exertion or motion being followed by paroxysmal

pain. We remark here, that absolute relief from pain was not expected from the division of the nerves operated upon; for, as is known, the third cervical nerve gives off branches which supply the skin of the top of the shoulder, which would still continue to exert its influence. The result has realized the views entertained upon this point previous to the operation. It is, without doubt, from the cutaneous branches of the third cervical nerve that the pain which the patient now experiences proceeds.

Concerning the operation, two practical points may be briefly referred to. In the first place, the facility with which the cords of the brachial plexus were reached; the procedure being by no means so difficult a task as was imagined. Secondly, it is of particular interest to note the total absence of shock following the operation, a condition which it was expected might readily follow such a serious systemic disturbance.

Through the kindness of Dr. R. M. Bertolet, we are enabled to present the appended report of the microscopic examination of the exsected nerve:—

"The excised portions of the nerves were, after the operation, at once placed in a 2 per cent. solution of chromic acid and hardened for section. Transverse cuts, stained in carmine and mounted in damar varnish, revealed the existence of what, at first sight, appeared to be an abnormally thick, hypertrophied enveloping sheath (neurilemma); but upon closer study, and on comparing with sections of the normal brachial plexus, it was evident that this apparent excessive development of the connective tissue sheath was no more than proportional to the increased size of the nerve trunk itself in this region.

"The connective tissue septa arising from the neurilemma, and subdividing the nerve trunks into secondary bundles, were scarcely, if any, more strongly developed than ordinarily; no marked proliferation of the connective tissue corpuscles existed. In the secondary fasciculi of the nerve, however, at many places were seen accumulations of young migratory cells ('granulation' of Virchow). The aggregation of these elements between the primitive nerve fibre was so great, at not a few points, as to press them widely asunder and lead to a corresponding atrophy of the individual fibres. The axis-cylinders were seen distinctly in every instance; the atrophy having taken place mostly at the expense of the surrounding medullary substance. The nerves that underwent these atrophic changes presented a very bright, highly refractive, glassy appearance under the microscope, strongly reminding one of amyloid degeneration, yet the iodine test failed to give any reaction; this if present, however, would not have responded on account of the preservative fluid employed. These bright spots occurred in circumscribed areas of the nerve bundles, while in the remaining portions the nerve fibres were unaffected; there having been just the faintest suspicion of commencing proliferation of the interstitial substance.

"In this specimen we do not have the same material growth of connective tissue, nor the attendant fatty metamorphosis, usually seen in marked cases¹ of *neuritis interstitialis*; yet the alterations found are sufficient to indicate that

¹ Virchow's Archiv, Bd. 53, p. 441.

this nerve has already fully entered the earlier stages of these inflammatory changes."

In conclusion, we desire to express our thanks to Dr. Mitchell for valuable suggestions offered, as well as for the interest manifested in the study of the case. For the careful attention to the patient, and for notes after the operation, our thanks are tendered to Dr. H. M. Perry, one of the House-Surgeons to the Hospital.

ART. III.—*Retinal Hemorrhage and its Connection with Cerebral, Cardiac, and Renal Lesions.* By CHARLES S. BULL, A.M., M.D., Assistant Surgeon to the New York Eye and Ear Infirmary; Microscopist to the Manhattan Eye and Ear Hospital.

RETINAL hemorrhage, or apoplexy of the retina, is an affection doubly interesting to the ophthalmologist and pathologist, not only intrinsically, but also from its connection with other affections, local as well as general. It is by no means a rare lesion, and offers an interesting field for observation and study, in respect of its causation and pathology.

Its causation is of a twofold nature; that is, the hemorrhage may have an intrinsic and an extrinsic origin. It may arise from disease within the eye, as neuro-retinitis, retinitis, or glaucoma, and is then said to be intrinsic in its origin; or it may originate in cardiac disease, chronic renal disease, or general disease of the vascular walls throughout the body. We occasionally meet with retinal hemorrhage in that obscure class of cases which we group under the head of the hemorrhagic diathesis, where there does not seem to be any particular disease of the vessels, and yet the patients suffer loss of blood from repeated hemorrhages from the mucous membranes and occasionally from the cutaneous surface. A sudden hemorrhage into the retina or vitreous humor, from the rupture of a retinal or choroidal vessel, may arise from some disease of the heart, or from an atheromatous condition of the coats of the vessels, or from chronic disease of the kidneys, and also, though rarely, from suppressed menstruation. When the hemorrhagic diathesis seems to be the predisposing cause, it almost always occurs in young persons, and there are generally multiple extravasations in the retina and vitreous humor. By the aid of the ophthalmoscope we can distinguish three varieties of hemorrhage, and some authorities say four. The first variety consists of small round spots or points, circumscribed or scattered over the whole fundus, though generally in the neighbourhood of a vessel. Secondly, we meet with longitudinal streaks or bands, and these are in the nerve-fibre layer. Thirdly, there occur larger, irregular masses, situated always near the large veins. The

fourth variety is a complete suffusion of the retina, a continuous extravasation of blood. These hemorrhages may be confined entirely to the retina, and this is usually the case; but it is by no means rare to meet with patients who complain of having lost their sight suddenly, and on examining the eye with the ophthalmoscope we get no reflex, and find the whole vitreous humor infiltrated with blood. It does not necessarily follow that this is the worst form of the disease, for the blood is generally absorbed, and some amount of vision at least restored. But in such extensive extravasations the blood generally comes from a ruptured choroidal vessel, showing that the trouble is not confined to the retina, but involves also the vascular tissue of the eye. Where the source of the hemorrhage is a retinal vessel, the extravasation always seems to show a greater tendency to extend outwards to the choroid than inwards towards the vitreous humor.

Apoplexy of the retina, having once occurred, shows a great tendency to recur, and where the recurrences are frequent, they may increase markedly the intraocular tension and give rise to hemorrhagic glaucoma. As an independent lesion, without any accompanying lesion of the tissue of the retina, apoplexy of the retina rarely occurs except in advanced life, most frequently after the fiftieth year, though it may accompany any form of retinitis at any age. Occasionally, though very rarely, it occurs coincidently with *purpura hemorrhagica*.

M. Ruc, in the "*Union Médicale*" for 1870, cites a case of retinal hemorrhage accompanying an attack of *purpura hemorrhagica* in a labourer, fifty years of age, who was an excessive drinker. Besides numerous spots of *purpura* upon the skin and mucous membrane of the mouth, the man had hematemesis, bloody stools, and numerous large hemorrhages into the retina, with marked disturbance of vision. In the right eye there was a hemorrhage into the macula lutea. Eight days later the spots of extravasation were darker, and in some there appeared small white spots. There was no albuminuria. The autopsy did not show any special changes in the organs, except the hemorrhages, and there was no change in the bloodvessels, as shown by the microscope. Some of the hemorrhages were in the choroid. There were some few fat granules in the tissue of the retina, but none in the walls of the vessels.

When these hemorrhages occur without any inflammatory action in the retina, they must be regarded as a sign of an anomalous state of the circulation, and an unfavourable prognosis is to be given.

Retinal apoplexy is ordinarily accompanied by a slight serous transudation into the tissue of the retina, which gives the latter an oedematous appearance. The prognosis is always more or less unfavourable, not so much on account of possible injury to the vision, as on account of its being a symptom of profound trouble elsewhere.

It often occurs simultaneously with lesion of the heart, and advanced general atheromatous degeneration of the walls of the bloodvessels, which

two morbid conditions are frequently the source of grave cerebral affections. The prognosis becomes still more unfavourable if it is a second or third attack.

When the retina itself is inflamed, then the walls of the vessels are involved. The extravasations in a retinitis are usually slight, but often very numerous. They are generally situated in the inner layers of the retina, but under the pressure of the blood they not unfrequently press into the meshes of its connective tissue framework. In this situation they appear columnar in shape, but near the papilla they are elongated. The frequent occurrence of extravasations in inflammation of the retina finds another cause in the swelling of the optic disk, from the nerve being involved, and the consequent venous congestion. Stellwag tells us that retinal hemorrhages occur not uncommonly in old people, particularly in those having a tendency to capillary hemorrhage of the brain. It is generally conceded that hypertrophy of the left ventricle of the heart increases the tendency to these hemorrhages.

And now, what are the subjective symptoms of a retinal apoplexy? Sometimes, though not very often, the patient may have some premonitory warnings of a faulty circulation, particularly if he is advanced in years. There may be attacks of vertigo and amblyopia, transient in duration, but recurring. But usually the hemorrhage occurs suddenly, and this is one of the most characteristic symptoms. The patient may wake in the morning and find that he is blind in one or both eyes, though usually the disease is confined to one eye, at least in the beginning. It may occur while he is pursuing his ordinary avocations, appearing as a dark red or black spot or ball before the eye, which rapidly extends and obscures the entire field of vision. Of course the impairment of sight produced by the hemorrhage depends on the extent of the effusion and its locality. There may be a single large clot, or a number of small ones. If the clot is a large one, the hyaloid membrane is usually ruptured, and the vitreous humor becomes filled with blood, and this is generally the case when the extravasation comes from a choroidal vessel.

Whether constitutional syphilis exerts any predisposition to retinal hemorrhage is by no means certain. Though inflammation of the retina is a not uncommon symptom in general syphilis, hemorrhages in this form of retinitis are not often seen, and though some authorities assert that syphilitic patients are very predisposed to what is usually called "retinitis apoplectica," their assertions are not sufficiently fortified by actual cases to be of very great value. The form of retinitis observed in constitutional syphilis is not usually of the exudative variety. The retina is swollen and œdematous and soon loses its transparency, but there is rarely anything more than a serous exudation. In a published account of clinical observations made at Wiesbaden for the years 1863 to 1866, Dr. Mandelstamm reports that among nine cases of syphilitic retinitis, there

were four of them accompanied by hemorrhagic extravasations, thus proving the assertion of some observers to be wrong, that apoplexy of the retina never occurs in syphilitic retinitis.

Retinal hemorrhages occur by far more frequently in men than in women, and also much oftener in patients over fifty years of age than under it. In the same report of Dr. Mandelstamm, just quoted, out of 26 cases of retinal apoplexy, 22 occurred in patients from fifty to eighty years of age, and 24 of the 26 cases were in men. Dr. Mandelstamm calls particular attention to the fact that the hemorrhages most frequently occurred in persons between seventy and eighty years of age, and thinks it by no means hypothetical to conclude that they are caused by atheromatous changes in the walls of the bloodvessels. In a report of the same institution at Wiesbaden for the years 1861 and 1862, Dr. Pagenstecher reports 19 cases of retinal apoplexy in two years, and calls attention to the fact that in many of these cases the amount of functional disturbance was comparatively slight, and by no means commensurate with the pathological changes as seen with the ophthalmoscope.

One of the cases was a robust man, thirty-three years of age, who had extensive hemorrhagic extravasations all over the surface of the retina, except at the macula lutea, and yet he read Jaeger No. 4 type, and had a normal field of vision. Five months later the hemorrhages were all absorbed and the patient read Jaeger No. 1 type. In this case there was no organic affection diagnosed.

The connection of retinal hemorrhage with lesions of the brain, heart, and kidneys is one of very great interest, and at the same time is still somewhat obscure. Perhaps the greatest doubt has been thrown upon the statements of some writers, that the hemorrhages into the retina occurring in elderly people are to be regarded as a premonitory or precursory sign of cerebral apoplexy. Of course, the only way to confirm the statement is to tabulate a sufficient number of cases in which extravasations into the retina have been followed at a varying interval by cerebral hemorrhage. This has not been done, and from the nature of things would be difficult of accomplishment. As a rule, we are unable to keep our patients under observation for any great length of time; yet, with some care I am convinced we might, in time, collect some valuable statistics on this point. I have seen three cases in which retinal apoplexy was followed by cerebral apoplexy, and I have now under observation a fourth case, which I expect will follow the same course. The history of these cases will be given subsequently in detail. Dr. Allbutt, in his valuable work on the ophthalmoscope, says that in cases of large cerebral hemorrhage, where there has been retinal disease and chronic disease of the kidneys, there were usually seen small hemorrhagic extravasations about the optic disks, but considers that these may occur in patients without the danger of an attack of cerebral hemorrhage, and even when the patients do not complain of their vision.

Hemorrhage into the retina has been recorded in a number of cases of encephalic apoplexy, but Dr. Allbutt is not disposed to think that any pressure upon the recurrent vessels could cause a rupture of the retinal vessels unless they were diseased. But we know as an established fact that in all cases of cerebral apoplexy occurring in old people, there is always atheromatous degeneration of the walls of the vessels generally throughout the body, and of course the retinal vessels do not escape.

Dr. Berthold, in the *Klinische Monatsblätter für Augenheilkunde* for April, 1870, relates a case of a woman, between thirty-five and forty years of age, who came to him with the complaint of sudden loss of vision in the right eye, and on examination with the ophthalmoscope he found a hemorrhage into the macula lutea. As he was on the point of dropping in some atropia to dilate the pupil, so that he might examine the whole fundus more carefully, she suddenly complained of feeling unwell, fell back, and died in three-quarters of an hour with all the signs of cerebral apoplexy. Unfortunately there was no autopsy. Dr. Heymann, in the year 1864, in the same journal, relates a case of retinal apoplexy occurring two months after the vision commenced to fail; the hemorrhages were situated near the optic disk, were from the veins, and rapidly increased in size and number. One month after their first appearance came the first attack of unconsciousness and paralysis. Before this the eye had given signs of neuritis and progressive atrophy of the optic nerve fibres. The hemorrhages occurred in both eyes to about the same extent.

There were probably in this last case cerebral lesions at the base of the brain near the left ventricle. The first ophthalmoscopic sign visible was the engorgement of the retinal veins, due to some hindrance to the flow of venous blood. Subsequently the pressure became greater, as was proved by a double sign, narrowing of the arterial calibre and rupture of the veins. Then came the sclerosis of the connective tissue of the nerve and retina, and finally the signs of apoplexy.

Dr. Reynolds considers that clots in the retina are to be regarded as warning symptoms of a cerebral lesion, and after the age of forty, they point at least frequently to the danger of the patient dying of cerebral hemorrhage. Dr. Tanner also considers them as warnings of cerebral lesions, classing them with the sudden transient attacks of blindness and diplopia which are met with. Dr. Hammond says, in speaking of cerebral hemorrhage, that defects of sight may occur, usually characterized by the presence of dark spots in the axis of vision. These are due to minute extravasations of blood into the retina, and are always of most serious importance. He says he has known retinal hemorrhages to precede by more than a year the occurrence of a more severe lesion.

Dr. Colman, of Barmen, has reported a number of cases of retinal hemorrhage in the *Berliner Klinische Wochenschrift* for February, 1870, some of which were followed by cerebral apoplexy. He draws particular attention to the fact that the retina is peculiarly liable to disturbances in its circulation, owing to its anatomical connections and anastomoses with

the vessels of the cranial cavity and jugular veins. This may either result in anæmia from hindrance to the arterial current, or in congestive hyperæmia due to pressure on the venous circulation from some cause within or without the cranium. Instances of the latter condition are by no means rare, such as swelling of the tissue of the optic nerve and retina from the pressure caused by tumours within the cranium or orbit, giving us the "*stauungs-papille*" of Von Graefe, in which hemorrhagic extravasations into the retina are very common. Dr. Colsman considers that in a general fatty or atheromatous degeneration of the vessels, retinal hemorrhages are to be regarded as preceding or accompanying cerebral apoplexy. In those cases where there is no perceptible disease of the arteries, he thinks that an increased blood pressure in the cranial veins from whatever cause, is readily propagated to the retinal veins owing to the rich anastomosis of the ophthalmic vein with the cavernous sinus. We no doubt sometimes meet with cases in which there is apparently no cause for the retinal hemorrhages, and these are just the ones which require most minute and careful scrutiny. A rigid examination will usually establish some etiological connection between the state of the retina and some other organ or tissue in the body.

One of Dr. Colsman's cases was a very corpulent woman, without any organic lesion, who had suffered from repeated attacks of retinal apoplexy. His ninth reported case was one of repeated hemorrhages into the retina in a woman, sixty-two years of age. There were a number of small, bandlike hemorrhages all over the retina of both eyes, some recent, others which had undergone retrogressive metamorphosis. There was no other disease of the eyes, nor of any organ in the body which might cause these extravasations. The sight improved somewhat as the hemorrhages became absorbed, but the patient soon after died of cerebral apoplexy. His eleventh reported case occurred in a perfectly healthy man, forty-two years of age, who complained of periodically recurring and transient redness of the conjunctiva and dimness of vision of one eye. There was oedema of the retina and papilla of this eye and some delicate hemorrhages. The patient complained of severe headache, particularly after any bodily exertion. About three months later he died suddenly from cerebral apoplexy. All these symptoms pointed to an abnormal state of the cerebral circulation.

The following four cases were under the writer's own observation for a time, and as the various symptoms point to an intimate connection between lesions of the retina and lesions of the brain, the histories will be given somewhat in detail :—

CASE I.—A. P., aged sixty-three, English, married, a book-keeper, applied to me in 1871 for an affection of the right eye, of some fourteen months' standing. He complained of a suddenly occurring dimness of vision, coming on at irregular periods, lasting a varying length of time, though never more than a few hours, and always being more intense when it first appeared, and gradually growing better. He said he had always led an exceptionally temperate life, and was apparently in excellent health. On examining the eye there was nothing abnormal externally, but with the ophthalmoscope there were seen a number of small, punctate hemorrhages

all over the retina, and some two or three upon the optic disk itself. There was no œdema of the retina, and no large extravasation anywhere. The retinal veins were perhaps a trifle engorged. The other eye was perfectly normal. His heart was examined and found healthy, as were also the liver and kidneys, the urine having been repeatedly examined and nothing abnormal found. A closer investigation showed disease of the radial and temporal arteries. The patient said that he frequently felt a fulness in the head after a meal or after stooping, but that the feeling soon passed off. Being sure of the connection between the repeated retinal lesions and the cerebral circulation, I cautioned the patient to lead a very quiet life, avoid all undue muscular and mental exertion, and report himself from time to time. He was seen three or four times and then disappeared, and on going to inquire about him, I was informed that he had died from cerebral apoplexy, following a recurrence of the dimness of vision. The death took place about eighteen months after the first appearance of the retinal lesion.

CASE II.—R. H., aged fifty-four, Irish, married, a gardener, applied to me for a sudden loss of sight in the left eye, which had come on two days before, while working at his business. The patient was short and stout, of full habit, and had in former years been a hard drinker. He had suffered from vague rheumatic pains for years, but had never had any distinct attack of rheumatism. He said he had always considered himself a healthy man until this failure of his sight. On testing his vision, I found he could count fingers at about ten feet, and could just make out Snellen CC at three feet; the vision in the other eye was normal. With the ophthalmoscope there were seen three large hemorrhages in the retina, two in the course of the ascending vein, and one along the main branch of the descending vein. There was no œdema and no pulsation, and the other eye was normal. His heart was examined and found healthy, though it was beating much more rapidly than was normal, but this, he said, had been the case for years. The urine was repeatedly examined, but nothing could be found that pointed to renal disease. His arteries were slightly atheromatous, but not markedly so. The patient was seen from time to time, and occasionally some small fresh hemorrhages made their appearance in the retina. He died suddenly one night after running rapidly some distance, with all the signs of cerebral hemorrhage.

CASE III.—W. H. B., American, aged fifty-two, single, a lumberman, complained of a sudden attack of blindness in both eyes, which had come on about a month before. Since then the vision had improved somewhat, though it was still very dim. The patient had been a man of violent passions, a hard drinker, and, while in the army, had contracted a severe type of malarial fever in some of the swamps of the Southwest, from which he had never entirely recovered. The liver was considerably enlarged, occasionally painful, and he suffered habitually from dyspeptic symptoms. There was a loud, blowing murmur over the base of the heart, synchronous with the first sound. I could detect no disease of the kidneys, though there was occasionally some pain in the lumbar region. On examining his eyes the vision was found reduced to $\frac{20}{C}$, and the ophthalmoscope showed numerous hemorrhages in the retina of variable size and shape, most of them undergoing retrogressive metamorphosis. The extravasations were so numerous as to give a general brownish colour to the whole fundus. The patient was told plainly the condition of affairs and the danger in which

he stood, and was advised to return to his home in Wisconsin and lead a quiet life. This he promised to do, but I afterwards heard that he had become paralyzed, and died unconscious, probably from cerebral hemorrhage.

CASE IV.—Mrs. T. C. S., aged sixty-four, applied to me in February of this year for a failure of vision which had come on suddenly in both eyes, and which had gradually grown worse. On examination, vision with

the right eye was $\frac{10}{CC}$, and with the left $\frac{20}{C}$. With the ophthalmoscope there were seen numerous large hemorrhages in the right retina, and incipient cataract. The extravasations were all in the course of the large retinal veins. In the left eye there were not nearly so many clots, and they were smaller than in the right eye. There was also an incipient cataract in this eye. The patient is of very full habit, short and stout, with chronic valvular disease of the heart, and a marked arcus senilis. She also suffers from chronic cystic catarrh and a femoral hernia of the right side. The urine has been examined carefully, and neither albumen nor casts have been found. The patient is still under observation, but I expect to hear of her death by cerebral hemorrhage, which may occur at any time.

It is a well-known fact that hemorrhage into the retina is a common accident in the advanced stages of chronic Bright's disease. Dr. George Johnson, of King's College Hospital, London, has advanced some interesting points explanatory of their causation, in the *Medical Times and Gazette* for July 2, 1870. In this disease of the kidneys, he says, the muscular walls of the minute arteries in most of the tissues, are much hypertrophied, owing to long-continued overaction. Excessive contraction of the minute systemic arteries impedes the onward movement of the blood, and calls for increased efforts on the part of the heart to carry on the circulation. Hence hypertrophy of the left ventricle. An obvious result of the struggle between the increased action of the heart and the increased arterial resistance is an increased strain and pressure on the arterial walls, and a consequent increased risk of hemorrhage from rupture of one or more minute arteries, such as we frequently meet with in a punctate cerebral hemorrhage. Dr. Johnson has observed in cases of Bright's disease with hypertrophy of the left ventricle, that, while as a rule the minute arteries in all the tissues have their muscular walls hypertrophied, the hypertrophy of the arteries of different tissues in the same subject is sometimes unequal. May not the hemorrhages into the retina and brain, that we meet with in these cases, be due to the fact that the increased propelling force of the hypertrophied left ventricle was not counterbalanced by an equivalent hypertrophy, and consequent resisting power in the minute cerebral and retinal vessels? Of course we must depend upon the microscope for solving the question whether the retinal vessels are hypertrophied or not, in cases of chronic Bright's disease, and, unfortunately, we are not very often able to get possession of the eyes of patients who have died from chronic renal disease. I was fortunate

enough, during the past summer, to follow up a case of retinitis albuminurica with hemorrhages, which I had seen in consultation. I was present at the autopsy, and got possession of one kidney, the heart, and one eye. A careful microscopic examination showed a very marked hypertrophy of the renal capillaries and small vessels of the heart, but the retinal and choroidal vessels were not much hypertrophied, though their walls were somewhat thicker than normal. This one case seems to go to support Dr. Johnson's views, but we need more cases. The situation of the hemorrhages in the retina which accompany retinitis albuminurica is somewhat different from the situation of retinal clots occurring in other forms of retinitis, though not always so; at least this is the conclusion I have drawn from my observations. We must recollect that in the class of cases now under consideration there is a pathological process going on in the eye, which if not always a strictly inflammatory one, yet always induces permanent destructive changes in the retina. We may say that there is always an inflammation of the retina present, the morbid process at first going on in the inner layers of the retina, anterior to and also involving the retinal vessels. There is always a degeneration of these vessels, and very soon the engorged and tortuous vessels rupture and extravasations of blood occur, partly in the form of fine, radiating streaks between the bundles of nerve fibres, partly in the form of larger oval or circular spots rendering it very difficult to recognize the smaller vessels. I have observed almost invariably that these hemorrhages occur around the posterior pole of the eye, or rather round the entrance of the optic nerve, and between the disk and the macula. They seem, as a rule, to have the form of the spokes of a wheel, radiating from the optic papilla as a centre. They occur most frequently in the advanced stages of the morbid process of the retina, after the outline of the papilla has become obscured, and the disk has become surrounded by a wall of brawny infiltration. On this wall small hemorrhages occur very frequently. There does not appear to be any particular period in the course of the renal disease at which these hemorrhages occur, though we are far more likely to meet with them at the period when the excretion of urine is more and more interfered with, consequent upon the atrophy of the renal tissue. Here the general circulation becomes more and more impeded, and the tension of the vascular system, augmented by the increased action of the hypertrophied ventricle, finally reaches a point where rupture ensues and extravasations occur. The blood does not always come from the larger vessels, though it sometimes does. *Hulke* says that he does not recollect an instance among the cases which he submitted to microscopic examination, in which the hemorrhage came from the larger vessels; it was always from the capillaries. The hemorrhages are usually in the inner layers of the retina, next the vitreous humor, though sometimes they infiltrate the whole thickness of the retina, and are even met with between the choroid and retina. In the case mentioned

above, in which I was fortunate enough to obtain the eye for examination, the extravasations in the retina were all in the nerve fibre and internal granule layers, but there were two or three clots in the swollen tissue of the optic disk, and quite a large one in the tissue of the nerve itself, just in the region of the lamina cribrosa. In this case the extravasations came from both large vessels and capillaries. Another point which I have observed in cases of retinitis albuminurica, is that retinal hemorrhages scarcely ever occur unless there is at the same time organic disease of the heart. They do occur sometimes where there is no cardiac complication, but this is not often the case. During the past three years I have had the opportunity of observing eighteen cases of retinitis associated with renal disease, and from these cases I have drawn the above conclusion.

The first case was a man, 30 years of age, who had all the symptoms of chronic Bright's disease, with affected vision in both eyes. The ophthalmoscope showed infiltration of the retina at the macula lutea, round the optic nerve, and between the nerve and the macula, and at the periphery near the ora serrata, there were patches of choroidal atrophy. Between the nerve and the macula in each eye were a number of longitudinal hemorrhages, always more superficial to the peculiar yellowish-white, glistening exudations. This man had hypertrophy of the left ventricle of the heart, with chronic valvular disease. He had moderate œdema of the face and extremities, frequent attacks of uræmic amblyopia, and marked dyspnœa. The urine contained albumen and fatty casts.

Case second was a man, 32 years of age, who had, when first seen, the peculiar stellate exudation round the macula and a brawny infiltration of the optic papilla, with a few small thread-like hemorrhages round the nerve entrance and upon the disk. Three weeks later he complained of being entirely blind in the left eye, and on examining him with the ophthalmoscope, the whole vitreous humor was found opaque, probably from a large hemorrhage, which completely concealed the fundus. This man had a tremendous rough, blowing sound at the apex of the heart, synchronous with the first sound, with marked hypertrophy. His urine contained albumen and granular casts.

Case third was a woman, 60 years of age, with œdema of the legs and feet, marked ascites, pale waxy complexion, and some dyspnœa. There was a mitral regurgitant murmur, hypertrophy of the heart, and constant palpitation. The retinae of both eyes were strewn with hemorrhages, but there was very little exudation into the tissue of the retina. The urine contained albumen, but no casts.

Case fourth was a man, 23 years of age, and was an exceptional one, in that, though the retinal hemorrhages were very abundant, and the renal symptoms most marked, he had no cardiac lesion.

Case fifth was a man, 55 years of age, in whom the hemorrhages were confined to the right eye, though both retinae were involved in the fatty degeneration. He had both valvular disease and hypertrophy of the heart. The urine contained albumen and casts.

Case sixth was a man, 43 years of age, with hemorrhage in both eyes, fatty degeneration of the retinae, and hypertrophy of the heart, but no valvular lesion. He had uræmic convulsions, and his urine was loaded with albumen and casts.

Case seventh was a boy, aged 15 years, with fatty infiltration of the retina in each eye, but no hemorrhages. He had no heart disease, and no very pronounced signs of chronic renal disorder except frequent micturition, though there was a history of convulsions and his urine contained albumen.

Case eighth was a woman, 18 years of age, with very marked retinitis albuminurica in both eyes, but no hemorrhages. She had no cardiac disease, but a great deal of general anasarca. Urine albuminous.

Case ninth was also a woman, 19 years of age, with retinitis albuminurica in both eyes, though most developed in the right eye, but there were a large number of hemorrhages on and around the optic papilla. She had had acute articular rheumatism three years before, and had both valvular disease and hypertrophy of the heart. The urine contained neither albumen nor casts.

Case tenth was a man, 23 years of age, with retinitis albuminurica but no hemorrhages. There was no cardiac disease, but the liver was very much enlarged, and there was considerable abdominal dropsy. The urine contained albumen, but no casts.

Case eleventh was a woman, 35 years of age, with retinitis nephritica, and enormous hemorrhages in both retinae. There was chronic valvular disease of the heart and some hypertrophy. The urine was albuminous, but contained no casts.

Case twelfth was also a woman, 47 years of age, with hemorrhages in each eye, punctate in character, and a general oedematous appearance of the retinae. She had both hypertrophy and valvular disease of the heart. The urine contained albumen and casts.

Case thirteenth was a woman, 25 years of age, with typical retinitis albuminurica, but no hemorrhages, and this patient had no cardiac complication.

Case fourteenth was a woman, 50 years of age, with incipient cataract and posterior staphyloma in the left eye, and retinitis nephritica with many hemorrhages in the right eye. She had chronic valvular disease and hypertrophy of the heart.

Case fifteenth was a woman, 43 years of age, with both eyes affected by the peculiar exudation accompanying chronic Bright's disease, and numerous small hemorrhages in both eyes. Chronic valvular disease and very marked hypertrophy of the heart. Urine loaded with albumen and casts.

Case sixteenth was a woman, 20 years of age, who had for several months suffered from general anasarca and occasional convulsions, epileptiform in character. There was no history of rheumatism, and on examining her chest no cardiac disease was detected. Her urine was nearly half solid with albumen, and contained casts of all kinds. With the ophthalmoscope the retina of each eye was seen to be the seat of the peculiar changes accompanying Bright's disease, but there were no hemorrhages. This case I had an opportunity of observing from time to time for more than a year, and at no time was there any extravasation of blood seen.

Case seventeenth was a woman, 25 years of age, in whom the renal trouble was consequent upon a gravid uterus. It was her first pregnancy, and during the sixth month she had some swelling of the feet and ankles, and shortly afterwards a series of convulsions, which lasted till evening, when she aborted. Immediately after this her eyesight began to fail, and she complained of dyspnoea and palpitation. On examining her eyes, I saw a neuro-retinitis in both, with enormous exudation into the disk and

retina and upon the disk two considerable hemorrhages in the left eye, and a number of smaller ones in the right eye. An examination of the chest revealed hypertrophy and valvular disease of the heart. A few days later, an examination showed several fresh hemorrhages from the horizontal vessels in both eyes. This patient afterwards died from what was probably cerebral hemorrhage, as she was paralyzed on the left side and died comatose.

Case eighteenth was one of monocular retinitis albuminurica in a woman, 39 years of age. In the right eye there was a general haziness of the fundus, and the veins were engorged and tortuous. In the left eye, below and between the nerve and the macula, was a yellowish mass of exudation in the deeper layers of the retina, from which radiated streaks or lines of the same colour. Just above the main mass of exudation were several hemorrhagic spots of varying size, and one or two small, punctate extravasations upon the optic disk. This woman had both hypertrophy and valvular disease of the heart, and her urine contained both albumen and casts.

In going over these eighteen cases hastily, we see that in eleven cases of retinal hemorrhage there was valvular disease and hypertrophy of the heart. In one case of hemorrhage, there was hypertrophy of the heart, but no valvular disease. In five cases there were no hemorrhages in the retina, and no cardiac disease of any kind. And finally in only one case was there retinal hemorrhage without at the same time cardiac lesion. These results, though taken from a small number of cases, seem to bear out the opinion already expressed, that retinal hemorrhages rarely accompany retinitis albuminurica, unless the renal disease is complicated by disease of the heart.

No. 214 West 44th Street, N. Y.

ART. IV.—*On Laparotomy, or Abdominal Section, as a Remedy for Intussusception; with Tables showing the Results of the Operation in cases of this Affection, and in those of other forms of Acute Obstruction of the Bowels.* By JOHN ASHHURST, Jr., M.D., Surgeon to the Episcopal Hospital, Surgeon to the Children's Hospital, etc.

IN my work on the *Principles and Practice of Surgery*, published in 1871, I expressed an unfavourable opinion of the operation of abdominal section in cases of intussusception or invagination of the bowels, though I added that I regarded it as a perfectly legitimate and proper procedure in cases of acute intestinal obstruction from other causes. The recent publication by Mr. Jonathan Hutchinson¹ of the history of a successful

¹ Med. Times and Gazette, Nov. 29, 1873, and Am. Journ. Med. Sci., January, 1874, p. 257.

operation of the kind in question, has led me to reconsider the subject, and to look more fully than I had previously done into its literature; and as a result of this further reflection and research, I feel bound to say that I can no longer consider the operation as never justifiable, though I still think that it can only be properly resorted to in very exceptional cases.

In the following pages I purpose to lay before the readers of this Journal some account of the cases in which the operation has been heretofore performed, and to endeavour to point out under what circumstances it may be resorted to with a reasonable prospect of benefiting the patient. It is at best a doubtful mode of treatment, and as such even the Celsian doctrine would not permit its adoption in any case not otherwise hopeless.

Laparotomy,¹ or abdominal section, is commonly said to have been first suggested as a remedy in cases of intussusception by Praxagoras, of Cos, one of the Aselepiadæ, who flourished about three and a half centuries before the Christian era. This statement is made on the authority of a passage in Cælius Aurelianus² (for no writings of Praxagoras himself have come down to posterity), but Hévin,³ who wrote against the operation in the last century,⁴ declares that the passage has been misinterpreted,⁵ and

¹ *Laparotomy*; from *λαπάρα*, the soft part of the body below the ribs, and *τεμνω*, I cut; the term *gastrotomy* is objectionable as being also applicable to the operation of opening the stomach. *Enterotomy* is an operation which aims exclusively at the formation of an artificial anus; it consists in making an incision, usually in the right iliac region, and opening the first portion of intestine which presents itself. *Colotomy* is an enterotomy practised upon the colon, and may be done either anteriorly or posteriorly. *Laparotomy* is distinctively an *exploratory operation*, and may or may not involve an incision into the bowel; when it does so, the term *laparo-enterotomy* is sometimes employed by systematic writers.

² Aout. Morborum, Lib. iii., cap. xvii. (Amst. 1722, p. 244).

³ Mém. de l'Acad. de Chirurgie (Paris, 1819), t. iv. p. 264.

⁴ According to Ducros (*Archives Gén. de Médecine*, Aout, 1838, p. 461), Hévin in a posthumous memoir, published in 1836, took a diametrically opposite view of this question, and strongly advocated the operation in certain cases.

⁵ The passage is no doubt an obscure one, but M. Hévin seems to me to have still further darkened counsel by his interpretation of it. Praxagoras, Aurelianus has been saying, employed emetics until he caused the vomiting of feces; some, after vomiting, he bled, and filled with wind through the anus, as advised by Hippocrates, and again, following Hippocrates, ordered the giving of sweet wine, etc. He then adds: "Some, in whom the intestine which the Greeks call the *blind gut* had, being filled with much fecal matter, slipped into the scrotum, he, pressing the bowels with his hands, vexed with great shaking. In some again, the above-named remedies having been exhausted, he advised that the belly should be divided even to the pubes (*dividendum ventrem probat pubetenus*); he said also, coming to impudent (*protervum*) surgery, that the rectum should be divided, and sewed up again when the feces had been withdrawn." The first paragraph which I have quoted no doubt indicates a rough kind of taxis in cases of scrotal hernia, but the second seems to me, by every fair interpretation of the text, to refer not merely to cases of hernia but to cases of the "iliac passion"

that Praxagoras merely taught the proper use of the knife in cases of strangulated hernia. Be this as it may, there is no evidence that the Greek Surgeon ever himself performed the operation, and the next reference to it appears to date back no further than the latter part of the seventeenth century, when Paul Barbette,¹ a surgeon of Amsterdam, after describing the symptoms and pointing out the often hopeless character of intussusception, asks "whether it would not be better, having made a dissection of the muscles and peritoneum, to take the intestine with the fingers and draw it out, than to abandon the patient to certain death?" Commenting upon this passage, Bonetus gives the details of what I think must be considered as the first recorded case of laparotomy for intussusception.² Hévin, indeed, rejects this case because it was communicated to Bonetus by a non-professional person (a clergyman of Geneva, who had long been intimate with the patient), and therefore was no doubt, he says, a simple herniotomy; but surely Bonetus was anatomist enough to know the difference between the two operations, and would not have adduced a case of the one as an example of the other. If we accept the case as genuine at all, we must, to be consistent, likewise accept Bonetus's interpretation of it.

CASE I.³—Baroness L—, suffering from ileus, was looked upon as being beyond remedy; there presented himself a young surgeon, who had long followed the camps, who promised certain safety if only the noble patient would submit to the making of an incision in her abdomen. She having consented, the surgeon went to work, and having drawn out and unrolled many intestines before the twisting and doubling up (*convolutio et contortuplicatio*) appeared; having by chance found this, he unfolded it, and loosed the knots, and afterwards restored it to its position. From this time, having sewed up the belly, he consolidated the wound with the happiest success, and restored the noble lady to entire health.

It is satisfactory to know that the grateful patient rewarded the skilful operator by conferring upon him an annuity, which, unhappily, he only lived to enjoy for three years.

The second recorded case, which also terminated successfully, is known as Nuck's, but it does not appear that this distinguished anatomist him-

generally. Certainly the ordinary operation for scrotal hernia does not consist in dividing the belly even to the pubes. M. Hévin's suggestion that perhaps the expression *rectum intestinum*, in this passage, does not mean the rectum, seems hardly worthy of contradiction.

¹ Anatom. Pract. Lib. iv., cap. i.—I have not been able to refer to Barbette's work, but the passage is quoted by both Bonetus and Hévin.

² Dr. Samuel Whitall, of New York, in an interesting memoir on the operative treatment of intestinal occlusion in general (*N. Y. Med. Journal*, August, 1873), quotes this case, from a recent thesis by Delaporte, of Paris, as one of *volvulus* or twisting of the bowel; Bonetus himself however gives it as an example of *intussusception*, and it is so cited by Velse, in connection with Nuck's case to be presently referred to.

³ Bonetus, *Sepulchretum*, t. ii. p. 228 (Genevæ, 1700).

self performed the operation, though it was done at his instance, and under his direction. An account of this case, the authenticity of which seems never to have been doubted until within the last fifty years, is given in the seventh volume of Haller's *Anatomical Disputations*, in the Inaugural Thesis of a certain Dr. Cornelius Henry Velse, on the authority of a pupil of Nuck, "a most truthful man and worthy of all confidence, H. Oosterdyke Schacht." In commenting upon the case recorded by Fuchsius, which will be considered hereafter, Dr. James Johnson, or one of his collaborators, says: "Our author informs us that Nuck performed a similar operation, as recorded in Haller's disputations. We have searched for the case, but could not find it;"¹ and Dr. Stephen Rogers, of New York (who by a curious coincidence misspells Fuchsius's name in the same way as his English predecessor), adds: "I have also searched for it with no better success. I therefore regard it as doubtful."² A community of ill luck in research which can only be accounted for by supposing that both investigators looked in the wrong work—perhaps in the seventh volume of Haller's collection of *Medical* disputations, instead of in the corresponding part of his *Anatomical* series. Nuck's case is as follows:—

CASE II.³—When, indeed, a woman fifty years old, worn out with the symptoms of this most cruel disease [intussusception], obtained relief by no remedies, whether enemata, fomentations, poultices, or the application of huge cups to the abdomen, which were successively employed by the celebrated Nuck; he, most happy in practice, suspecting the existence of invagination, caused a most skilful surgeon to make an opening in the abdomen four fingers' breadth from the umbilicus and in an oblique direction backwards and downwards, to draw out the intestines (which were without delay warmed with tepid milk), to search for the seat of intussusception, to disentangle this slowly, presently to replace all the intestines, and at length to sew up the abdominal wound.

By this bold operation, and Nuck's judicious after-treatment, the patient, we are told, "was, as it were, snatched from the throat of death," and survived twenty years. It is particularly mentioned (and this is a point of some importance) that at the operation the bowels were found "not yet inflamed, nor adherent (*inflammata necdum, nec coalita*)."

The third case, in chronological order, is reported with full details by Dr. F. A. Fiedler, as having occurred in the practice of General-Staff-Surgeon Professor Ohle, of Dresden. The patient died from exhaustion and peritonitis a few hours after the operation.

CASE III.⁴—The patient was a man fifty years old, who, though of a strong constitution, was very irritable, and had suffered periodically, since March, 1810, from hemorrhoidal colic, with blind, and sometimes bleeding, piles. A year before he had had a severe nervous fever, accompanied with obstinate constipation, and had since often complained of difficult defecation, which was

¹ *Medico-Chirurgical Review*, N. S., vol. iii. (London, 1825), p. 539.

² *Trans. N. Y. State Medical Society for 1872*, p. 323.

³ Haller, *Disputat. Anatom. Select.*, vol. vii. (Göttingæ, 1751), p. 126.

⁴ *Magazin für die gesammte Heilkunde*, herausg. v. J. N. Rust; Bd. ii. s. 253 (Berlin, 1817).

always attended with a feeling of fulness and straining in the left side of the abdomen. This colicky condition with constipation and difficult micturition continued more or less until July (being, however, usually relieved every three or four days by mild laxatives, or by antispasmodics and anodynes, with oily inunctions, fomentations, and enemata), but from that time until September was entirely absent. The patient was, by his occupation, unfortunately, constantly exposed to the risk of catching cold, and after long exposure his disease returned with abundant bloody stools. After being again chilled about the 6th of October, fever set in, with shivering, tenesmus, constipation, and dysuria, which could be relieved neither by the remedies which had previously been employed, nor by the application of leeches to the fundament. Although there had been no passage for four days, the belly was swollen only in the right hypochondriac and iliac regions, while there was pain on slight pressure especially in the undistended portions. The pulse was almost, if not quite, normal. All medicines were vomited, but not drink. The patient complained of a tumour which completely filled the cavity of his rectum, and by the constant and violent straining was forced down to the anus. Here lay the lower end of an everywhere unattached tumour, which descended by the left side of the promontory of the sacrum, and by efforts at urination and defecation was readily protruded to the extent of about half an inch; its body, on the side of the bladder, felt smooth, but behind, in the hollow of the sacrum, rough and uneven, and its base, which could hardly be reached by the finger, seemed indented and as if covered with a membrane. In spite of the persistent use of emollient poultices, with anointing of the belly, the injection of demulcent decoctions into the rectum, and the inward administration of an oily emulsion with laudanum, the tumour remained without change. All the symptoms became aggravated, especially the colicky pain, which was accompanied with troublesome straining, and which, always beginning in the left flank and spreading over the whole abdomen, was only mitigated by vomiting. The patient now took calomel and opium, and in the intervals lenitive electuary, with enemata; the belly was alternately rubbed with camphorated ointment of marshmallow and soap liniment. A bougie was introduced into the rectum so as, if possible, to push up the tumour, but all these experiments proved fruitless, as did the employment of a bath with inunctions on the 12th of October, and injections of decoction of hyoscyamus with laudanum, and clysters of decoction of tobacco and tobacco smoke. An attempt was also made to draw out the tumour with forceps wrapped with sticking-plaster, on the 14th of October, but as fruitlessly as the pushing back of the same into the rectum, whereby it seemed as if the finger, squeezed into the inch-wide cavity of the tumour, was grasped by this, and surrounded by a cool stream of air.

At last, on the 15th of October, Dr. Ohle was called in consultation, and immediately made a close examination of the rectal tumour. This had the smoothness of bowel, was indented on its posterior surface, measured about three inches transversely, and on its anterior surface, sweeping towards the anus, had the form of the segment of a ball. In its middle was a blind sinus into which the point of the forefinger entered. The left side of the belly was flattened, but all the rest swollen. The vomiting after taking medicine or drinking, as well as after each paroxysm of pain, gave the patient great relief. The pulse was nearly normal, the respiration free, and the skin everywhere of a proper temperature. At each periodic return of the straining, the tumour was violently forced downwards. The urine was of a brownish-red colour, and deposited a red sediment. All these signs, taken in connection with the history of the case, indicated an intussusception of the colon, wherefore Dr. Ohle tried first the taxis, but without any result.

On the 17th of October the tumour was, upon the repeated entreaties of the patient, who looked upon it as a great mass of hemorrhoids, cautiously opened with a knife by a certain surgeon without the cognizance of the other medical attendants; only a little hemorrhage followed, and soon stopped of itself. Shortly after, the physicians found not only the tumour driven out by straining, with its rough covering of mucous membrane, but they saw also five dark-red epiploic appendages protruded from the yet recent wound, and felt among them

a portion of small intestine—Ohle thought of the jejunum—whereby the existence of a true intussusception of the colon was plainly enough revealed.

As all the remedies hitherto employed had proved unavailing, Ohle, with the consent of the patient and of the other physicians, undertook laparotomy the same afternoon.

After the bladder had been emptied by means of a catheter, and the patient placed almost on his right side, the line of incision was marked with India ink, out of the course of Poupart's ligament and of the left femoral and epigastric arteries, extending from the junction of the cartilages of the second and third false ribs to a point one inch above the anterior superior spinous process of the ilium, $5\frac{1}{2}$ inches long, and parallel to but $3\frac{1}{4}$ inches¹ from the linea alba. The skin and external oblique muscle having been divided, and a small artery tied in the upper angle of the wound, an opening was made through the remaining muscles and the peritoneum, and enlarged upwards and downwards with scissors and a probe-pointed hernia-knife.

As the edges of the wound were somewhat drawn apart by an assistant, the transverse colon, distended with gas, deeply congested, and a little displaced to the left, appeared at the upper part of the incision, together with the gastro-colic omentum. While Ohle, with his oiled left hand in the abdominal cavity, traced up the transverse colon from its projecting part to the seat of intussusception, the greater part of the colon, with the small intestines, protruded from the left side of the wound, but were gently held back by an assistant with linen soaked in warm water. Meanwhile, since, on account of the tightness of the invagination, disentanglement could not be effected without force, another surgeon pushed the tumour up from below through the rectum, while Ohle himself, after cautiously separating the adhesions in the whole periphery of the intussusception, and joining his fingers on both sides, with his right hand gently withdrew the invaginated colon, and gradually unfolded it. The length of the adherent colon was almost twelve inches. In the blind end of the cæcum lay a portion of displaced jejunum, which, like the descending colon, was much inflamed and abnormally thickened. The inch-long transverse wound which before the laparotomy had been made in the flexure of the colon, was now closed by a bowel suture and held by an assistant with a waxed thread passed through the left mesocolon, in order that the protruded portion should be replaced and the edges of the wound reunited with a knotted abdominal suture. The ligature and suture threads were, as well as the abdominal dressings, fastened with sticking-plaster, Ohle's uniting bandage being then applied, and the whole covered with a fourfold compress steeped in warm oxycrat (vinegar and water). The patient was placed almost on his right side, given ten drops of Sydenham's laudanum, and allowed an occasional drink of almond emulsion. Two hours afterwards he complained of a fixed pain at the lower part of the wound; his pulse became small and quick; he suffered great thirst; but his temperature was not abnormal. In six hours he had a soft, and very offensive stool, and at night was hot, restless, and delirious. His pulse failed rapidly, his breathing became difficult, but his pain was relieved. Involuntary evacuations followed, and the patient died towards morning with a gradual aggravation of all his symptoms. A *post-mortem* examination made thirty hours after death revealed general peritonitis, with an inflamed and gangrenous condition of the part of the bowel which had been implicated in the invagination.

The above case I have given at some length, as it appears never to have been published either in England or in this country. A fourth, and the third recorded *successful* instance of laparotomy for intussusception, was communicated by the operator, Dr. Fuchsius, to Hufeland's Journal for February, 1825. An extract of this case appeared in Johnson's *Medico-Chirurgical Review* for the same year, and its chief features have also

¹ Erroneously stated in the text as $\frac{3}{4}$ inch, but correctly given in the account of the autopsy.

been reproduced by Dr. Stephen Rogers, in his paper read before the New York State Medical Society, and already referred to.

CASE IV.¹—The patient was a strong and healthy man, 28 years old, who, while at work, was suddenly seized with violent pain in the region of the umbilicus. With great difficulty he succeeded in reaching his home, where he lay down in the open-air and went to sleep; on awaking, he vomited some mucus, and felt relieved; in the evening his bowels were moved, but not freely. During the night the pain was bearable, but returned periodically. The next day the symptoms were aggravated, paroxysms occurring every twenty or thirty minutes, and lasting five minutes at a time. The corporation-doctor who was called in now prescribed cathartics and enemata, and bled the patient from the arm; temporary relief was obtained, but in the evening the pains recurred with increased frequency. No passage was obtained from the bowels, but large quantities of wind were brought up by eructation after every paroxysm. Anodynes were now administered, and camphorated ammonia liniment was applied to the abdomen, while frequent lukewarm baths were also employed, and the enemata continued. Fuchsius was called in consultation on the fifth day, and on the seventh, finding that no improvement had followed the various remedies employed, suggested an operation; this, however, was not permitted by the patient until the tenth day, when, in addition to the previously mentioned treatment, six ounce doses of metallic mercury had been fruitlessly tried. The operation consisted in making a small opening about two inches above the position of the umbilicus and in the line of the outer border of the right rectus abdominis muscle, the wound being subsequently enlarged with a probe-pointed bistoury to the extent of seven or eight inches. Introducing his oiled hand into the cavity of the abdomen, Fuchsius discovered an intussusception, but found that he could not reach the point at which it began without making a transverse incision from the right to the left of the belly; rather than do this, he determined to open the bowel itself at the lower end of the intussusception, and by introducing his finger into the gut to effect reduction by gradually pushing the invaginated portion from below upwards. In this manner he succeeded in relieving the intussusception which involved a portion of intestine over two feet in length. A large round worm was found in the opened bowel, but there was no trace of inflammation nor any abnormal condition. The intestinal wound was closed with a continued suture of silk, the ends being brought through the external wound, which was itself closed with the ordinary interrupted suture. Convalescence was satisfactory, the bowels being spontaneously moved on the night of the second day, and the patient having entirely recovered by the fourteenth day after the operation.

The next case appears to have been the first in which laparotomy was practised for intussusception in a child. The operator was Gerson, and the case was communicated by him to Dr. Hachmann, of Hamburg, by whom it is reported.

CASE V.²—The patient was a male infant, twelve weeks of age, and was seen by Dr. Gerson on Sept. 18, 1828. In addition to symptoms of obstruction there was hemorrhage from the bowels, and a tumour was recognized in the inguinal region as well as by digital exploration of the rectum. An oblique incision was made in the direction of Poupart's ligament, beginning about two fingers' breadth from the anterior spine of the ilium and passing inwards. As soon as the abdominal cavity was opened, a bunch of invaginated intestines was found in the left inguinal region; the adhesions were very firm, yet it was possible to draw out about an inch of the invaginated portion in a tolerable condition,

¹ Journal der Practischen Heilkunde, herausg. v. Hufeland und Osann, lx. Band, ii. Stück, s. 42.

² Zeitschrift für die gesammte Medicin, herausg. v. Fricke u. Oppenheim, Bd. xiv. (1840), s. 303.

that which followed being of very thin calibre, about the thickness of an adult processus vermiformis; after about a foot's length had been thus disengaged, without materially diminishing the thickness of the mass, the bowel gave way under traction, at a gangrenous part. The operation was under these circumstances abandoned; the little patient remained lively for a while, but died about six o'clock in the afternoon.

The only case, so far as I know, in which laparotomy for intussusception has been resorted to in this country, occurred in the practice of Dr. John R. Wilson, of Tennessee, afterwards of Mississippi, and was communicated by his pupil, Mr. W. W. Thompson, to the *Transylvania Journal of Medicine and the Associated Sciences* for 1835.

CASE VI.¹—The patient was a negro, 20 years of age, who for seventeen days had suffered from symptoms of intestinal obstruction. There was stercoraceous vomiting, but no mention is made of intestinal hemorrhage. The treatment had consisted in the administration of active purgatives and metallic mercury. The operation consisted in making an incision five inches in length in the linea alba, the umbilicus being about the middle of the wound. The bowels protruded, and the seat of obstruction was found in the ileum. Disinvasion was effected by grasping the intestine above and below, and forcibly rupturing the adhesions, which were quite firm. The bowel and omentum were deeply congested, and "seemed to be on the verge of mortification." The wound was closed with sutures and adhesive strips, and the patient placed in bed. "His recovery was rapid and entire."

The next case in chronological order is that of Hauf or Hauff, which was published in the *Heidelberg Medical Annals* for 1842. I have not been able to refer to the original report, and therefore give the operator's name on the authority of Adelman² and Leichtenstern,³ both of whom include the case in their tables. Dr. Whitall erroneously cites the case as Krug's, the fact being that Krug was merely the compiler who furnished an account of the case to *Schmidt's Jahrbücher* for 1843.

CASE VII.⁴—The patient was a man, 36 years of age, not large, but strongly built, of an atrabilious constitution, "a good worker, but a still better eater and drinker." In the month of May, while overheated, he drank cold, sour, unfermented wine, and was immediately seized with violent colic, which forced him to roll on the ground and cry aloud. This lasted with little interruption for more than a month, until in July the patient finally allowed himself to be taken to the hospital. At this time he was jaundiced and somewhat emaciated, and at varying intervals suffered from violent colicky pains of greater or less duration; he had from two to eight stools daily, passing coagulated blood, pus, and mucus, mixed with fecal matter, but the latter only in small particles. The belly was not distended, but sometimes in one place, sometimes in another, though particularly in the left hypogastric region, were felt isolated sausage-shaped swellings two to four inches long, one such almost constantly corresponding in position with the sigmoid flexure. These gave a clear tympanitic sound on percussion. The belly generally felt tight, and was sensitive, partic-

¹ *Transylvania Journal of Medicine*, vol. viii. p. 486, and *Am. Journ. of the Med. Sciences*, vol. xviii. (O. S.) p. 262.

² *Vierteljahrsschrift für die praktische Heilkunde* (Prag.), Bd. lxxviii. (1863), s. 42.

³ *Ibid.*, Bd. cxxi. (1874), s. 45.

⁴ *Heidelb. Med. Annal.*, Bd. viii., s. 428, and *Schmidt's Jahrbücher*, Bd. xl. (1843), s. 214.

ularly at the localities of the above-mentioned swellings. There was no fever, urination was regular, and the appetite was good, though taking food sometimes caused pain in the abdomen; nothing abnormal was discovered by careful exploration per anum. The disease was, therefore, regarded as chronic enteritis with ulceration of the mucous lining of the bowel, and leeches were applied to the belly, oily emulsions given, and enemata of cold flaxseed mucilage. Some relief was obtained by these measures, but the condition of the abdomen and the stools remained the same. For the intestinal swellings, which under the finger could be felt to vary in size with the peristaltic motions, assafoetida emulsions were given, cold fomentations applied to the belly, and enemata of cold water administered. Rectal exploration still gave a negative result. The condition of the patient now yet further improving, he left the hospital, and was not again heard from until October, having in the interval felt tolerably well, though his pains occasionally returned, and though he frequently had a sensation of some obstruction in the rectum; digital exploration now revealing the presence of a round soft body the size of a walnut. One night, after the patient had plentifully indulged in new wine, and had subsequently become chilled, the pains and straining recurred, and this rectal body sank lower, and more than once, under violent straining, protruded as a dark-red tumour the size of an apple. The belly was now distended and tympanitic, but not very tender, and the tumour in the left hypogastric region was again conspicuous. Two and a half inches within the rectum was found a rosette-like soft tumour, the size of an apple, nearly filling the pelvis. The finger passed all around it, and at its middle was an opening, which was formed by a hard stricture feeling like a hard lip of the os uteri. The rectum itself was normal, and the tumour not painful, but there was a discharge of bloody mucus from the anus. The tumour, recognized as an invaginated portion of bowel, was readily replaced through the stricture, with relief to the patient. On the next morning, however, the protrusion recurred, with tenesmus and discharge of bloody mucus, and the tumour, now harder, more tense, and closely embraced by the stricture, could not be replaced. Incessant vomiting followed, with hiccough, great meteorism, a small, quick pulse, Hippocratic countenance, and most violent pain in the enlarging tumour, which in size and hardness resembled that produced by a child's head entering the pelvis. Three days later a completely gangrenous portion of empty large intestine protruded from the rectum, from which flowed an offensive liquid. Reposition was now easy; no hard tumour could be felt, and no stricture, but only a kind of pouch, which came down again as often as it was pushed up; vomiting had ceased, but there was no action from the bowels; the belly was distended, and the tumour of the left side felt like a degenerated ovary. By the wish of the patient laparotomy was now undertaken, not with a hope of relieving the invagination, for the bowel must long since have become gangrenous, but that the patient might perchance be saved by the formation of an artificial anus. An incision three inches long was made from below upwards and outwards, two inches above Poupart's ligament and four inches to the left of the linea alba. As soon as the peritoneum was cautiously opened, a pint of clear, yellow, inodorous fluid instantly spirted out in a stream; the peritoneum was bluish, and one inch thick. The wound having been enlarged, the finger immediately came upon a stony-hard, sausage-shaped tumour, and at all accessible points were hard knotted rolls the thickness of the finger. The surface towards the operator was of a dusky bluish-red colour, and manifestly consisted of intestine with greatly thickened walls. No cavity was reached by a deeper incision, and by a still deeper wound it appeared that only a thickened intestinal wall, closely compressed by another portion of bowel lying posteriorly, was cut through, behind which the latter was plainly revealed just as the former had been by the first incision. The finger felt on all sides the already-described knots, and innumerable adhesions; in separating these the contents of the bowel escaped from the wound, but the point of rupture was in vain sought for. The operator now wished to divide the tumour transversely, but after he had cut into it to the depth of an inch without finding the cavity of the bowel, he abandoned all further search, arrested the hemorrhage, and placed the ligatures with a tent in the lower angle of the wound. The

operation occupied half an hour. The following night was tolerably peaceful; there was no vomiting, but severe pain. The next morning a large quantity of fecal matter and intestinal mucus appeared at the wound, and the finger found the tumour as on the day before; the belly was distended and tympanitic; and the gangrenous intestine protruded about six inches beyond the anus. This [gangrenous mass] was cut out from the rectum at as high a point as could be reached with scissors. These symptoms continued without much change, fecal matter passing from the wound and a little from the anus, and the patient complaining less of pain than of unquenchable thirst, and retaining perfect consciousness until his death on the ninth day after the operation. A *post-mortem* examination showed the bowels and omentum matted together in the hypogastric region; the whole intestinal canal, and especially the stomach, distended with air and of a bluish-red colour; the tumour behind the abdominal wound dusky bluish-red, very hard, six inches long and two or three thick, and the three incisions which were made at the time of the operation gaping, without any attempt at repair, and with feces at their deepest parts. The whole mass consisted evidently of three portions of bowel invaginated together, the beginning of the intussusception being in the ileo-colic region. The lower third of the ileum formed the beginning of the invaginated portion, and a part of the cæcum with the appendix vermiformis, contracted, dark-red, and adherent on all sides, formed the innermost part of the tumour. The invaginated ileum, on the other hand, was but little reddened, and not much altered. The next part involved in the invagination was the descending colon, which was drawn over to the right, and passed immediately into the sloughing, dark crimson, ulcerated rectum. The walls of all the above-named portions of intestine were much hypertrophied. In the cavity of the pelvis all was adherent and bluish-red in colour, and it could not be ascertained to which portion of the large intestine the part removed by sloughing had belonged, nor in what manner fecal matter could have reached the anus, since nowhere was any channel to be found which was sufficient for the purpose. The rest of the bowels were pushed out of place, the omentum and mesentery thickened in parts, the liver and gall-bladder very large but healthy.

All the cases hitherto considered, with the exception of Gerson's, occurred in adults; the next occurred in an infant, and is reported by the operator, Mr. Spencer Wells.

CASE VIII.¹—The patient was a child four months old, and symptoms of intussusception had lasted more than four days when the operation was resorted to, injections, insufflation of air, and the use of a sponge-probang having previously failed to relieve the invagination which could readily be felt by introducing the finger into the rectum. An incision two inches long was made in the median line, just below the umbilicus, and disinvagination was effected with some difficulty. Acupuncturation of the intestine was also practised to relieve its distension. The child was almost moribund when the operation was begun, and actually died five hours after its termination.

Of the three next cases I am able to give but few details; one of them has, I believe, never been published, and the other two I know only from the tables of Adelman and Leichtenstern.

CASE IX.²—The operator in this case was Pirogoff. The patient was a lad, sixteen years of age, and the symptoms of obstruction were of considerable duration. The invaginated portion of bowel was found in a gangrenous condition; the gut was opened, and its edges attached to those of the external wound. Death occurred shortly after the operation.

¹ Trans. Path. Society of London, vol. xiv. (1863), p. 170.

² Vermischte Abhandlungen aus dem Gebiete der Heilkunde, St. Petersburg, 1852, s. 150; quoted by Adelman (*loc. cit.*, p. 44), and by Leichtenstern (*loc. cit.* p. 45).

CASE X.¹—The operator was M. Laroyenne, of Lyons. The age of the patient is not mentioned. Disinvagination was impossible on account of the existence of adhesions. The case terminated fatally.

CASE XI.²—This case, which occurred in the practice of Mr. Athol Johnstone, appears never to have been published; it was referred to by Mr. Holmes in the discussion which followed the reading of Mr. Hutchinson's case before the Royal Medical and Chirurgical Society of London. The patient was a child, and the case terminated fatally.

In the next case the operator was Prof. Weinlechner, of Vienna; I have not been able to refer to the original report by Dr. Maximilian Herz, and have, therefore, taken the facts of the case from the abstracts in Schmidt's *Jahrbücher* and in Hayem's *Revue des Sciences Médicales*.

CASE XII.³—The patient, a female infant of six months, was suddenly attacked in the night with violent colicky pains, followed by a slightly bloody stool. There was another paroxysm the next morning, and from this time the discharges consisted almost exclusively of bloody mucus, while food was vomited as soon as it was taken. On the following day a tumour was felt in the left hypogastric region, and was recognized as an intussusception of the descending colon. No information was gained by a digital exploration of the rectum. Prof. Weinlechner operated on the morning of the fourth day without the aid of chloroform; an incision three inches long was made over the tumour, and the peritoneum cautiously opened upon a grooved director. The invaginated portion was found to consist of the extremity of the ileum, the cæcum, and processus vermiformis, and the ascending and transverse colon; the tumour measured three inches in length, and about two fingers' breadth in its other dimensions. The parts were very much congested, and disinvagination and reposition were effected with great difficulty. The wound was closed with twelve sutures, and cold compresses applied; but the child died six hours afterwards in convulsions, a post-mortem examination revealing the existence of acute peritonitis.

The last case to be considered is that reported by Mr. Hutchinson; it has been so recently published in this Journal, that a very brief reference to it will be sufficient.

CASE XIII.⁴—The patient was two years old, and the intussusception had been a month in forming. Its extremity, presenting the inverted ileo-cæcal valve, protruded several inches beyond the rectum. The abdomen was opened in the middle line below the umbilicus, and disinvagination was effected without difficulty. Recovery was rapid. This case is quoted by Leichtenstern from the Transactions of the first Congress of the German Surgical Association, held at Berlin in 1872; but the age of the patient is incorrectly given as four years, and the operation is said to have been performed on the tenth day. This case is also referred to by Mr. Waren Tay, in the Biennial Retrospect of the New Sydenham Society for 1869-70 (p. 295).

¹ Servier, De l'occlusion intestinale, 1870; Leichtenstern, *loc. cit.*).

² Holmes, in British Medical Journal, Dec. 6, 1873, p. 661.

³ Oesterr. Jahrbuch für Pädiatrik, Bd. i. (1872); Schmidt's Jahrbücher, Bd. clvi., s. 119; and Revue des Sciences Médicales, t. i., p. 218 (Paris, 1873).

⁴ Med. Times and Gazette, Nov. 29, 1873; Brit. Med. Journal, Dec. 6, 1873, and Am. Journ. of the Med. Sciences, Jan. 1874, p. 257.

Tabular view of Thirteen Cases of Laparotomy for Invaginated Bowel.

No.	Sex and age of patient.	Operator.	Symptoms before the operation.	Duration of disease.	Result.	Duration of life after operation.	Remarks.
1	Female, adult	Military surgeon referred to by Bonetus	Symptoms of "Ileus"	Not mention'd	Recovered	....	Case rejected by Hévin, but accepted by Velse.
2	Female, aged 50 years	Surgeon employed by Nuck	Not specified	Not mention'd	Recovered	....	Patient was "worn out" by her sufferings; enemata, etc., failed to give relief; bowels not inflamed nor adherent.
3	Male, aged 50 years	Ohle	Symptoms of obstruction, with vomiting, great pain, and hemorrhage from the bowels	11 days	Died	About 12 hours	The intussusception, which protruded from the rectum, had been previously cut into. Autopsy showed peritonitis and gangrene of bowels.
4	Male, aged 28 years	Fuchsius	Symptoms of obstruction merely	10 days	Recovered	....	In order to effect disinvagination, it was found necessary to open the bowel.
5	Male, aged 12 w'ks	Gerson	Symptoms of obstruction with hemorrhage from the bowels	Not mention'd	Died	A few hours	Bowel ruptured, and operation abandoned.
6	Male, aged 20 years	Wilson	Symptoms of obstruction merely	17 days	Recovered	....	Firm adhesions; parts much congested.
7	Male, aged 36 years	Hanff	Symptoms of obstruction, followed by peritonitis, with hemorrhage from bowels, and gangrene of mass which protruded from rectum	Several days	Died	9 days	Bowel ruptured and operation abandoned.
8	Child aged 4 mos.	Spencer Wells	Not specified	4 days	Died	5 hours	Child almost moribund at time of operation.
9	Male, aged 16 years	Pirogoff	Not specified	Symptoms of considerable duration	Died	Died shortly after operat'n	Gangrene of bowel; an artificial anus was made.
10	....	Laroyenne	Not specified	.....	Died	....	Adhesions prevented disinvagination.
11	Child	Athol Johnstone	Not specified	.....	Died	....
12	Female, aged 6 mos.	Weinlechner	Symptoms of obstruction, with great pain, vomiting, and hemorrhage from the bowels	3 days	Died	6 hours	Died in convulsions; peritonitis found at autopsy.
13	Female, aged 2 years	Hutchinson	Symptoms of obstruction merely. Intussusception protruded from anus	1 month	Recovered	....	Disinvagination effected without difficulty.

I have in the preceding pages brought together, with more or less detail, the histories of thirteen cases in which laparotomy, or abdominal section, has been undertaken for the relief of intussusception. This number is I believe larger than that collected by any previous writer, and, though too small to be of much value for statistical purposes, is sufficient to enable us to draw some conclusions of value as to what cases may hereafter be submitted to this mode of treatment with a reasonable hope of benefiting the patient.

An inspection of the table shows, in the first place, that no encourage-

ment is afforded to repeat the operation in very young infants. The only cases in which it has been resorted to during the first year of life, have all terminated fatally (Gerson, Wells, Weinlechner). But when it is remembered that of Pilz's¹ 162 cases (all occurring in children), no less than 91 were in infants less than a year old, it will be seen how large a proportion of cases must at once be put aside as unfitted for operative treatment. It is very true that the fatality of intussusception at this early age is enormous, the mortality being according to Leichtenstern's² elaborate statistics no less than 86 per cent. But the case is very different from that, for instance, of an operation for imperforate rectum; for in this condition there is necessarily no hope but in an operation, whereas in the case of intussusception experience shows on the one hand that, even at this age, a certain number do recover without operation, and on the other hand that, as might indeed be expected, operative treatment is in such cases of no avail.

In the second place, the table shows that in what may be called *acute* cases, those, namely, in which in addition to symptoms of obstruction there are evidences of strangulation, such as peritonitis and intestinal hemorrhage, a resort to operative interference will be productive of no benefit. These cases are, on the other hand, as justly remarked by Mr. Hutchinson, precisely those in which there is most hope of recovery by sloughing of the invaginated portion. This point is well illustrated by Leichtenstern, who finds that of 557 cases of which the termination is known, sloughing occurred in 149, of which 88 ended in recovery and 61 (41 per cent.) in death, while of the 408 in which sloughing did not occur, only 63 terminated favourably and 345 (85 per cent.) in death.

There remains then a limited number of cases, in adults or at least not in very young infants, in which the symptoms are those of obstruction merely, without intestinal hemorrhage or peritonitis, and in which, when other measures fail, the question of operation may properly be considered. And here it may be said that if any operation at all is to be performed, *abdominal section* should be chosen rather than either *enterotomy* or *colotomy*: these could at best give but temporary relief, and have, I believe, never proved of permanent value in any case of intussusception; whereas *laparotomy*, as seen by the table, has already proved successful in five instances. At what period the use of enemata and other bloodless remedies should be abandoned, and operative measures instituted, must, in the absence of further experience on this point, be left to the judgment of the surgeon in each particular case.

If the cases which I have tabulated are to be used for purposes of statistical comparison, the first two (Bonetus's and Nuck's) should, I

¹ Schmidt's Jahrbücher, Bd. cxlvi., s. 178.

² Loc. cit., p. 17.

think, be left out of consideration : these were single successful cases, each occurring in a separate century, and (were all the facts known) could no doubt be over-matched by unsuccessful cases which have never been recorded. Of the eleven cases which have occurred during the present century, three terminated in recovery, and eight in death—a proportion which corresponds almost exactly with that which, as shown by Leichtenstern, obtains for all cases of intussusception taken together, for of 557 terminated cases collected by this writer, 151 (27 per cent.) ended favourably, and 406 (73 per cent.) proved fatal.

Before terminating this paper I must refer briefly to the results of laparotomy in the treatment of intestinal obstruction from other causes than intussusception. This subject has been studied statistically by several authors, among whom may be particularly mentioned, Phillips,¹ Delaporte,² Whitall,³ of New York, and Adelman.⁴ The last named writer has tabulated 33 cases, of which, however, five are examples of intussusception. In the annexed table I have brought together 57 cases, which, with the 13 of invaginated bowel already considered, make a total of 70 cases of laparotomy for intestinal obstruction, the largest number, I believe, which has as yet been collected.

Tabular view of Fifty-seven Cases of Laparotomy for Acute Intestinal Obstruction from other causes than Intussusception.

No.	Operator.	Nature of lesion.	Result.	Reference.
1	Adelmann	Protrusion of intestine through slit in rectum	Died	Prag. Vierteljahrschrift, Bd. lxxviii. s. 42, Nro. 13.
2	"	Strangulation persisted after reduction of hernia	"	Ibid., s. 55.
3	Anderson	Strangulation by a band	"	Med. Times and Gazette, 1858, vol. ii. p. 45.
4	Annandale	" " "	"	Edinburgh Med. Journal, vol. xvi. (1871) p. 700.
5	Avery	Stricture of colon	"	Trans. Path. Society, London, vol. ii. p. 62.
6	Berndt	Volvulus	Recovered	Adelmann, Prag. Vierteljahrschrift, Bd., lxxviii., s. 42, Nro. 10.
7	Billroth	Strangulation persisted after herniotomy	Died	Archiv für klinische Chirurgie (Langenbeck), Bd. i., s. 485.
8	Borelli	Strangulation by a band	Recovered	Whitall, in N. Y. Medical Journal, August, 1873, No. 20.
9	Brodie	Protrusion of intestine through slit in rectum	Died	Lancet, vol. xii. (1827) p. 502.
10	Bryant	Strangulation by a band	Recovered	Med.-Chir. Transact'ns, vol. I. (1867) p. 65.
11	Buchanan	Volvulus	"	Lancet, 1871, vol. i. p. 776.
12	Canton	Internal strangulation	Died	London Medical Gazette, vol. xii. (N. S.) p. 78.
13	Coulson	Obturator hernia	"	Lancet, 1863, vol. ii. p. 303.
14	Curling	Strangulation persisted after herniotomy	"	Ibid., 1850, vol. ii. p. 81.
15	Depaul	Strangulation by a band	"	Whitall, loc. cit., No. 22.
16	Dieffenbach	Strangulation persisted after reduction of hernia	"	Operative Chirurgie (1848), Bd. ii., s. 439.
17	Druitt	Strangulation by a band	"	Med.-Chir. Transactions, vol. xxxi. (1848) p. 245.
18	Dupuytren	" " "	"	Leçons Orales, 2e édit., t. iii. p. 650.
19	Erichsen	Volvulus	"	Lancet, 1850, vol. i. p. 108.
20	Fergusson	"	"	Med. Times and Gazette, 1862, vol. ii. p. 435.

¹ Med.-Chir. Transactions, vol. xxxi. (1848), p. 22.

² De la Gastrotomie dans les Étranglements Internes, Paris, 1872.

³ New York Med. Journ., August, 1873, p. 113.

⁴ Loc. cit., p. 44.

No.	Operator.	Nature of lesion.	Result.	Reference.
21	Fergusson.	Adhesion of ileum to uterus	Died	System of Practical Surgery (1870), p. 651.
22	Fischer	Strangulation by omentum	Recovered	Adelmann, loc. cit., s. 46, Nro. 32.
23	Gay	Strangulation by a band	Died	Trans. Path. Society, London, vol. iii. p. 101.
24	Gross	Volvulus	"	System of Surgery (1872), vol. ii. p. 677, and private note from operator.
25	"	"	"	Ibid.
26	Hamilton	Scirrhus of colon	"	Med. Times and Gazette, 1864, vol. i. p. 88.
27	Hancock	Strangulation by a band	"	London Med. Gazette, vol. xii. (N.S.) p. 77.
28	Hilton.	Strangulation by old adhesions	"	Med.-Chir. Transactions, vol. xxx. (1847) p. 51.
29	"	Obturator hernia	"	Ibid., vol. xxxi. (1848) p. 323.
30	"	Strangulation by mesentery	"	Association Medical Journal, May 12, 1854, p. 408.
31	Hoegg	Volvulus	"	Sandifort, Thesaur. Dissertat., vol. iii. p. 87.
32	Holmes	Strangulation by a band	"	Surgical Treatment of Children's Diseases, 2d edit., p. 570.
33	Hulke	" " "	"	Med. Times and Gazette, 1872, vol. ii. p. 482.
34	Jones	Strangulation persisted after herniotomy	"	Ibid., 1854, vol. ii. p. 182.
35	Larquet	Strangulation persisted after reduction of hernia	Recovered	Adelmann, loc. cit., s. 46, Nro. 33.
36	Lawson	Constriction by scirrhus mass	Died	Med. Times and Gazette, 1861, vol. i. p. 675.
37	Leopold	Strangulation persisted after reduction of hernia	Recovered	Adelmann, loc. cit., s. 44, Nro. 25.
38	Luke	Stricture of colon	Died	Trans. Path. Society, London, vol. ii. p. 218.
39	Manlove	Strangulation by old adhesions	Recovered	Boston Med. and Surgical Journal, vol. xxxii. (1845) p. 492.
40	Marcacci	Strangulation by a band	"	British Med. Journ., March 23, 1872, p. 314.
41	Monod	Constriction by scirrhus mass	Died	Archives Gén. de Médecine, 1838, t. ii. p. 455.
42	Pagenstecher	Obstruction by cyst of gall-bladder	Recovered	Archiv für klin. Chirurgie (Langenbeck), Bd. ii., s. 318.
43	Parise	Strangulation by a diverticulum	Died	Whitall, loc. cit., No. 28.
44	Pauli	Strangulation by omentum	"	Adelmann, loc. cit., s. 44, Nro. 17.
45	Phillips	"Ileus"	"	London Medical Gazette, vol. xiii. (N.S.) p. 233.
46	Pirogoff	Strangulation by a band	"	Adelmann, loc. cit., s. 44, Nro. 21.
47	Prieger	Strangulation persisted after reduction of hernia	Recovered	Ibid., Nro. 23.
48	Reali	Volvulus	"	Froriep's Notizen, 3 Reihe, Bd. ix. (1849) s. 95.
49	"	Obstruction by stick of wood in rectum	"	Prag. Vierteljahrsschrift, Bd. xxvi. s. 50 (Analekten).
50	Renault	Strangulation persisted after herniotomy	"	Archives Gén. de Médecine, 1845, t. i. p. 458.
51	Reybard	Cancer of sigmoid flexure	"	Bulletin de l'Acad. de Médecine, t. ix. p. 1031.
52	Ritter	Volvulus	Died	Adelmann, loc. cit., s. 44, Nro. 29.
53	Tessier	Strangulation by a band	"	British Amer. Journal, vol. i. (1860) p. 251.
54	White	Obstruction by teaspoon in ileum	Recovered	Journal der praktischen Heilkunde, Febr. 1811, s. 124.
55	Wood	Strangulation persisted after reduction of hernia	"	Western Lancet, vol. xiv. p. 720.
56	.....	Obstruction from intestinal concretion	Died	Monro, primus, apud Jaeger; Adelmann, loc. cit., s. 42, Nro. 1.
57	.....	Strangulated hernia	Recovered	Blancard, apud Mém. de l'Acad. Roy. de Chir., t. iv. p. 337 (éd. 1819).

NOTE.—In addition to the cases given in the preceding table, there are others attributed to Dupuytren, Jobert (de Lamballe), Malgaigne, and Velpeau, which are rejected by Adelmann, but to the original reports of which I have not been able to refer. One of Dr. Whitall's cases (No. 16, Luke) I have omitted, as being rather an operation for the formation of an artificial anus than a laparotomy; it is properly tabulated by Adelmann among his cases of enterotomy. Cheselden's operation for scrotal hernia, described by Heister,¹

¹ Inst. Chirurgicæ, tom. ii. p. 813 (Amst., 1739).

Haller,¹ and Louis,² as one of abdominal section, appears, from Cheselden's own account and illustration of it,³ to have been a simple herniotomy. I must take this opportunity of expressing my thanks to Prof. Gross for having courteously furnished me with the particulars of his two cases of laparotomy for volvulus.

Of the fifty-seven cases included in the above table, it will be seen that only eighteen terminated successfully, so that the mortality of laparotomy in cases of intestinal obstruction other than intussusception, is over 68 per cent. But the prospect of recovery without operation is in these cases much less favourable than in those of intussusception, and in some instances, as *e. g.* in cases of strangulation by a fibrous band or diverticulum, or of protrusion of the gut through an aperture in the mesentery, the patient is, humanly speaking, inevitably doomed unless saved by the knife. Hence in any case of *acute* intestinal obstruction, in which judicious medical treatment has failed to give relief in the course of three or at most four days, and in which the age of the patient and the absence of the distinctive symptoms of invagination lead to the belief that the pathological condition present is one of intestinal strangulation (which, next to intussusception, is by far the most common cause of acute obstruction), it is, I think, undoubtedly the surgeon's duty to urge an exploratory operation as the only means of saving life.

From a study of the cases referred to in the preceding pages, the following conclusions may, I think, be considered as fairly established.

I. Past experience gives no encouragement to operative interference in cases of intussusception occurring in infants less than one year old.

II. When the symptoms present, and particularly the existence of intestinal hemorrhage, render it probable that the closeness of the intussusception will lead to sloughing of the invaginated portion, no operation is advisable; for while under these circumstances an operation would almost surely fail, there is a fair hope that separation of the invaginated mass may lead to spontaneous recovery.

III. There may be, however, exceptional cases, in which, while there is no prospect of recovery through sloughing, bloodless remedies fail to give relief, and the patient is in danger of succumbing through exhaustion and long-continued suffering; under such circumstances, if the age and general condition of the patient do not forbid it, the question of operative interference may properly be considered.

IV. When an operation is determined upon, *laparotomy* should invariably be preferred to either *enterotomy* or *colotomy*; these, though suitable operations in cases of congenital occlusion and chronic obstruction

¹ Bibliotheca Chirurgica, tom. ii. p. 23 (Basileæ, 1775).

² Mém. de l'Acad. Royale de Chirurgie, t. iv. p. 336 (Paris, 1819).

³ Anatomical Tables, Tab. 39, p. 44 (Boston, 1796); and Treatise on the High Operation for Stone, Tab. xvii., p. 178 (London, 1723).

of the bowels, are unsuited for cases of intussusception or other varieties of acute obstruction.

V. In cases of acute intestinal obstruction from other causes than intussusception, should milder measures fail to give relief in the course of three or at most four days, laparotomy should be unhesitatingly recommended, and may under such circumstances be resorted to with a reasonable hope of success.

ART. V.—*On Thrombosis of the Cerebral Veins, and Sinuses of the Dura Mater.* (Second paper.) By JOHN A. LIDELL, M.D., of New York.

III.—THE traumatic and inflammatory forms of this disease, or rather the clinical history of these forms, were minutely described in the number of this Journal for January, 1874. There is, however, still another variety of thrombosis of the cerebral veins and sinuses of the dura mater, which possesses a great deal of interest and importance. It is met with only in subjects who are much weakened from want of food, or loss of blood, or profuse discharges, or broken down by the weight of years, or worn-out by some exhausting disease, that is, in marasmic subjects, without the concurrence of any local traumatic or inflammatory lesion to which the origin of the thrombus can be ascribed, and hence we have, in the *third* place, a *marasmic* variety of thrombosis that affects these veins and sinuses. It is strictly analogous to the marasmic variety of thrombosis, which sometimes presents itself in the veins of the extremities. It is of pretty frequent occurrence. It embraces rather more than one-fourth of the cases collected by Prof. Von Dusch; and almost one-fourth of those collected by the writer. It is important not only from the frequency of its occurrence, but when we closely examine the individual instances of it, and especially when we contrast them with the cases which belong to the other varieties of cerebro-venous thrombosis, we find important differences as well as numerous other points of interest. In the writer's opinion the *marasmic*, as well as the traumatic and inflammatory varieties of cerebro-venous thrombosis, has not yet received that degree of attention which it really deserves. He therefore proposes to describe it also, as fully as he can, within reasonable limits; and this description will be chiefly drawn from the history of thirty-eight cases, of which one was observed, and twenty-one were collected by Von Dusch, and an additional sixteen were observed or collected by the writer. It may here be remarked that Von Dusch styles this variety of cerebro-venous thrombosis "*thrombosis of the sinuses from debilitating influences.*" The term *marasmic* thrombosis of the above-named vessels, however, is preferable in a vast majority of instances.

1. Perhaps the most striking of all the cases belonging to this category, are those in which young children having diarrhœa, or dysentery, or cholera infantum, but especially those who are badly nourished, or have become much debilitated and shrunken in appearance from the profuseness or long-continuance of alvine discharges, rapidly sink into a state of unconsciousness, with or without convulsions, and thus after a time expire. Dr. Gerhardt (*Von Dusch's Memoirs*, New Sydenham Soc. Ed., pp. 111-114) relates four cases of this sort. They all occurred in very young, artificially fed children, and agree very closely with each other. Take the following as a fair example of the clinical phenomena and post-mortem appearances.

A well-fed boy, three months old, was seized with profuse diarrhœa; greater fontanelle flat, and pulsating strongly; temporal and frontal veins very prominent; both jugulars much and equally distended. He lies quietly, with an unconscious stare, and occasional strabismus; both pupils equally dilated. Then there followed complete unconsciousness, opisthotonos with rigidity, sinking of the fontanelles, overlapping of the skull bones, convergent strabismus, etc.; the left external jugular became more distended; then the right external jugular enormously so, while the left one appeared almost empty; left side of face slightly paralyzed; left pupil more dilated; after some transient improvement, death on the eleventh day. *Autopsy*.—Superior longitudinal sinus, filled with fluid blood and recent coagula, anteriorly. A knobby, discoloured, firm thrombus in posterior part; it also extends into both lateral sinuses, and causes them, especially the left, to appear externally like thick, roundish hard cords; in the left it is partially adherent, and completely fills the sinus; in the right not. Hyperæmia of pia mater, and gray substance; extravasation beneath scalp, at back part of head; bones of skull very hyperæmic in same situation; pneumonia patches in both lungs; usual condition of intestine. (*Ibid.*, p. 112.)

Another case was that of a little girl, aged eleven months, who sank into stupor and died, after only three days' vomiting and diarrhœa. The skull bones overlapped, and the nape muscles were contracted. On *autopsy* the straight and both lateral sinuses we found plugged up with a crumbling, adherent, symmetrically formed thrombus, while the brain, pia mater, and plexuses were hyperæmic and œdematous. No other lesion was revealed that would account for the head symptoms and the fatal issue. It is not improbable that the following case, which occurred in the writer's practice, belongs to the same category as the above:—

CASE LV.—The patient, a pale-looking little boy, aged about two and a half years, had dysenteric diarrhœa. The disease appeared to readily yield to the treatment employed, which consisted mainly in a carefully regulated diet, confinement to bed, poulticing the bowels, and administering calomel with Dover's powder in small doses, alternated occasionally with *ol. ricini* as a laxative. At the end of about the third day he was free from fever, his pulse and skin had become natural, his countenance bright though pale, his stools much less frequent, and more natural in appearance, and I expected he would make a speedy recovery. The next morning, however, I found him lying in a state of profound stupor, with dilated pupils, and a very pale face, I learned that the diarrhœa had given no trouble through the night, and that he was discovered to be insensible on trying to waken him in the morning. He sank rapidly, and died comatose, in the evening. No *autopsy*. His appearance was quite anæmic at the outset of his attack. It should also be stated that he had recently crossed the ocean from Europe with his parents, who were trades-people in moderate circumstances. This voyage, with the insufficient feeding for an infant likely

to attend it, may have had something to do in producing the anæmic state which was already present when the diarrhœa appeared. Now, although no autopsy was allowed in this case, I infer from the nature of his disease, from the morbid state of his blood, from the sudden appearance of stupor and coma, and from the post-mortem lesions which have been found in strictly analogous cases, that this little patient too had thrombosis of the sinuses of the dura mater which caused the coma and the fatal result.

With regard to the causation of the thrombi, and the interpretation of the clinical phenomena in cases such as the above, Dr. Gerhardt has offered a very reasonable, and upon the whole a very satisfactory theory, which is in substance as follows :—

The profuse discharge of fluids which not unfrequently attends the diarrhœa, as well as the cholera of infants, necessarily lessens the quantity of the blood, and produces inspissation of it. At the same time absorption of the parenchymatous fluid takes place throughout the substance of the organs in general, but especially in that of the very watery brain of infants. In consequence of this the contents of the skull become correspondingly diminished in volume, whereby the atmospheric pressure causes, first, depression of the fontanelles, and afterwards, when this no longer suffices, overlapping at the sutures. If this compensation also prove insufficient, a distension of the vessels of the brain and its meninges occurs; and the diminution of the general mass of the blood, the lowering of the power of the heart, and the inspissation of the blood itself, all tend to retard the current, that is, to produce stagnation, and lead to the formation of coagula in a locality so favourable as the sinuses of the dura mater. The unequal prominence of the jugular veins is a natural consequence of the obstruction of one of the lateral sinuses with coagulum, inasmuch as the vein corresponding to the obstructed sinus will be less full than the other. This phenomenon, which must be most strongly marked in the deep lying internal jugular vein, also shows itself by a circuitous route in the external jugular of the same side.

The observations of Dr. Gerhardt and others, render it pretty certain that in cases of cholera infantum and other diarrhœal diseases of children, where loss of consciousness, and other head symptoms suddenly and unexpectedly present themselves, the cerebral phenomena are due to the obstruction of the sinuses of the dura mater with coagula, much oftener than is generally supposed.

2. But thrombosis of the cerebral veins and sinuses of the dura mater not unfrequently occurs in children suffering from other diseases, especially those of a chronic and exhausting character. Thus, Prof Von Dusch relates the case of an infant, aged nine months, which came under his own observation.

The little patient was teething, and much debilitated by the discharge from a large abscess of the thigh. Death was preceded by great collapse, without convulsions. The superior longitudinal sinus was found completely filled anteriorly by a firm, three-cornered, pale clot of blood, that adhered to its walls, and was laminated in structure. The veins emptying into this sinus also contained tough, firm, colourless clots. Besides, the same writer has collected five other juvenile cases, in which the marasmic variety of cerebro-venous-thrombosis appears to have been the immediate cause of death. One of them was a child, aged two years, "which had long been very weakly;" another was a little girl, aged four years, who had strumous ophthalmia, with swelling of the glands, and pneumonia; the third a boy, aged fourteen years, who suffered from ague-cachexia, with œdema of the limbs, enlargement of the liver and spleen, diar-

rhoea, etc.; the fourth a boy, aged fifteen years, who had for several months suffered from pleurisy, with œdema of the feet, and dyspnœa; and the last, a girl, aged twelve years, suffering from typhoid fever, one month advanced in its course.

Dr. West (*Lectures, etc.*, pp. 108, 109, 4th Am. ed.) relates a case in which the cerebral veins and sinuses of the dura mater were extensively obstructed with thrombi, and death appeared to have resulted therefrom.

CASE LVI.—The patient was a little girl, aged about thirteen months, who had sunk into a state of marasmus after an attack of scarlet fever. "No new symptoms came on till she was suddenly seized with extreme faintness, amounting to almost perfect syncope. She rallied, however, under the use of stimulants; but, forty-eight hours afterwards, the faintness returned, and terminated in death, without any convulsion having preceded it." On *autopsy*, the posterior half of the longitudinal sinus, the torcular, the left lateral, and left occipital sinuses were found blocked up with fibrinous coagulum, and their walls were thickened, etc. The ventricles contained a considerable quantity of fluid. There was great venous congestion beneath the middle lobe of the left hemisphere; the cerebral veins in that situation were distended with coagulum, and their coats were thickened. In the left middle lobe, towards its anterior part, were also four recent extravasations of blood, each of which was connected with an obstructed and distended vein. The largest clot extended an inch into the cerebral substance; the others were of smaller extent.

The cerebral hemorrhage constitutes an important feature of this case. It was obviously due to the occlusion of certain of the cerebral veins with thrombi. The blood brought into the brain by the arteries escaped into the cerebral substance, because it could not find its way out again through the obstructed veins. Moreover, this hemorrhage was, in all probability, the immediate cause of the faintness or syncope which terminated the patient's life.

Concerning the diagnosis of cerebro-venous thrombosis Dr. West justly observes that we are not acquainted with any symptoms which are pathognomonic of this affection; but when head-symptoms suddenly present themselves in debilitated or cachectic children and do not run the course of any ordinary form of cerebral disease, such symptoms will probably be found to be due to the formation of blood-clot in the cerebral veins or sinuses.

Dr. Bouchut, an eminent authority on the subject of thrombosis, relates (*Journ. f. Kindk.*, 1868) the two following cases, which serve to still further illustrate the clinical relations and phenomena of the marasmic variety of cerebro-venous thrombosis when it occurs in children:—

CASE LVII.—A little girl had suffered for several months from whooping-cough. Broncho-pneumonia ensued; incomplete anæsthesia attended, which quickly deepened into a condition resembling asphyxia. Then convulsions, lasting four hours, set in, were repeated twice on the same day, and led to death. The autopsy revealed considerable brain-congestion, and a small quantity of serous effusion in the pia mater under the arachnoid; besides, old coagula were found in the sinuses of the dura mater; these thrombi were hard and colourless, and one was fifteen centimetres in length; it extended along the lateral sinus, and reached the mouth of the jugular vein. Another thrombus, still harder and paler, lay in the superior longitudinal sinus. It had grown fast to the walls and completely obliterated the sinus.

CASE LVIII.—Another case was that of a phthisical child, in whom thrombosis of the cerebral sinuses induced delirium twelve hours before death. The ophthalmoscope revealed a gray papilla, surrounded apparently by œdema. The boundaries were not recognizable, and were rather surmised from the puncta around which the veins radiated. The vessels were large and pale; the choroid also was very pale, and, like the retina, looked as if covered with fine white sand. The cause of the delirium was sought for in the sinuses of the dura mater, and the associated atrophy. The accuracy of this diagnosis was confirmed by autopsy. Tubercles and cavities were found in the lungs. The longitudinal and transverse sinuses of the dura mater were completely closed by blood-plugs, of which some were old, whitish, firm, and more or less adherent to the walls, whilst others were still fresh, blackish, soft, and had clearly been formed in the last moments of life. The brain and its membranes were sound. On examining the eyes there was seen, through the retina, close around the papilla, a rosy areola beset with red puncta. * After removing the retina it was easily seen that the vessels of the choroid were filled with blood. The inner layer of this membrane had quite vanished, a few cells only were seen, and these had degenerated into fat. The pigment-cells of the lamina were quite gone, or were atrophic. The sand-like appearance seen with the ophthalmoscope before death was only an optical illusion, and was plainly due to the want of pigment in the choroid. (*New Sydenham Soc. Retrospect*, 1867-1868, pp. 426, 427.)

The latest clinical observations of Bouchut teach that, in cases where, after long chronic diseases, children die in convulsions or delirium, we should look for thrombi in the great veins of the brain and its membranes. He also recalls to mind how many chronic diseases of children terminate in convulsions. As a rule, they are the forerunners of death. Many children thus die in the course of marasmus brought on by lung-phthisis, simple, chronic, and tubercular enteritis, vertebral caries, white swelling of the joints, hooping-cough complicated with broncho-pneumonia, etc. It was long believed that the delirium and convulsions which appear at the end of such chronic diseases were simply the result of impoverishment of the blood. Most physicians think that inanition and chlorosis are the consequences of the cachectic state, and that the cachexia itself is developed through the protracted disease of the infant organism. This is generally true, and Bouchut recognizes the correctness of Marshall Hall's explanation of hydreencephaloid.

But there are cases, he says, such, for example, as the above, in which the loss of consciousness and convulsions result from a quite different cause. In them the formation of thrombi in the sinuses of the dura mater, which obstruct the flow of blood from the brain, produces passive congestion of the brain-substance, and impaired nutrition of the nerve-fibres and ganglion-cells. For when the venous blood does not flow out of the cerebral capillaries the fresh arterial blood which is necessary to the performance of the function of nutrition cannot pass into the cerebral capillaries so as to reach the histological elements of the cerebral substance and maintain their functional activity and integrity. Whenever this form of passive congestion of the cerebrum is excessive and not compensated for, the ganglion-cells and nerve-filaments of the cerebrum lose their functional activity, and loss of consciousness ensues; and the loss of consciousness may be partial or complete; it may be stupor on the one hand, or coma on the other, according to the degree of the passive con-

gestion, or the completeness with which the escape of venous blood from the brain-substance is prevented by the presence of coagula in the cerebral veins and sinuses of the dura mater. Finally, in some cases where at first the passive congestion of the brain-substance is not severe enough to produce stupor or convulsions, it may so modify the nutrition of the brain-substance as to induce delirium.

Dr. M. E. Fritz (*Bulletins de la Société Anatomique de Paris*, 1860, pp. 70-73) relates a very instructive case of marasmic thrombosis of the cerebral veins and sinuses of the dura mater, of which the following is an abstract:—

CASE LIX.—A boy, aged 11, an inmate of the Hôpital des Enfants, had Pott's disease of spine, with profuse purulent discharge, and was becoming much debilitated, when he was suddenly seized, August 28th, with vomiting, headache, and drowsiness. On August 29th he was found in bed lying on his back, with shrunken features, moaning, and unconscious; eyes convulsed, axes divergent, pupils dilated; lower extremities contracted; pulses slow and irregular.

August 31. Profound coma; afterwards profuse sweats limited to face, neck, and upper part of chest.

September 4. He had convulsions in the morning, and died comatose at 8 in the evening.

Autopsy.—Brain very soft, almost diffuent; arachnoid raised up by a serous fluid, containing some gelatinous flocculi. Four or five cerebral veins (superior and anterior, on both sides) were distended and plugged up to the extent of several centimetres, next to the sinus, with blackish-brown, tolerably dry, and elastic coagula; cerebral veins generally much gorged with blood. The vein-clots were continuous with a thrombus which occupied the superior longitudinal sinus through its whole length. In anterior half of sinus the thrombus was dark-brown; back of that, grayish-white, spotted with red externally, and of the colour of wine-lees at the centre, adhering pretty closely by its outer layers to the fibrous bands of the sinus; still further back it became thin, no longer filling up the calibre of the sinus, and its extremity was prolonged a little into the torcular Herophili. The walls of the sinus nowhere presented an inflamed appearance, being smooth and not injected. The left lateral sinus also contained a small coagulum, similar to the above.

The light-coloured part of the thrombus, under the microscope, was found to consist of granular fibrin, mingled with a great number of leucocytes, some oil-drops, and red globules more or less altered. These facts showed that the coagulation was not very recent.

Dr. M. E. Fritz (*Ibid.*, pp. 75-77) relates another very interesting case of infantile marasmic thrombosis of the cerebral veins and sinuses of the dura mater. The following is a condensed account of it:—

CASE LX.—A little boy, aged 3½ years, entered the Hôpital des Enfants January 5, 1859, for prolapsus of rectum of six months' standing. Badly nourished and living in misery he had had measles and smallpox in the last six weeks; and a few days before admission he was seized with whooping-cough. He was very pale and feeble, but without fever; the fits of coughing were pretty frequent, and terminated by vomiting. January 7. Symptoms of capillary bronchitis. January 8th and 9th. He was extremely prostrated and unable to sit up; face extremely pale. On the evening of the 9th he became delirious. On the morning of the 10th he was much sunken, and did not reply to any question. His general sensibility was blunted, but not extinguished; breathing difficult and oppressed. During the day strabismus appeared. In the evening pulse 180 and very small. He died on the 11th.

Autopsy.—Visceral arachnoid considerably elevated by serum. Cerebral veins gorged with black blood; superior longitudinal sinus contained, besides some liquid blood and soft black coagula, a fibrinous concretion which extended

its whole length. It adhered to the walls, which were entirely normal, by some prolongations that entwined themselves in the trabeculae of the angles. It nowhere completely obliterated the calibre of the sinus. At the posterior extremity it was cylindrical and had a diameter of four millimetres; at the middle it was ribbon-shaped or flattened; at the anterior extremity it terminated in a point. It sent prolongations into many veins along the sinus. The calibre of these veins was thus almost completely obliterated. The right lateral sinus was occupied by a similar concretion, nine centimetres long by about four millimetres thick. The middle lobe of right lung presented numerous spots of atelectasis, accompanied by capillary bronchitis with thick purulent secretion.

These two cases differ from each other very much in respect to the symptoms referable to cerebro-venous thrombosis which presented themselves during life. In the first of them the attack came on suddenly with vomiting, headache, and drowsiness. There followed convulsive movements of the eyes, with dilated pupils and divergent strabismus, profound coma, general convulsions, and death. In the other, the earliest head-symptom was delirium. Towards the end, however, strabismus appeared, but there were no general convulsions. These cases also differ from each other equally much in respect to the coagula which were found in the cerebral veins and sinuses of the dura mater, on autopsy; for in the first case the thrombus was large enough to fill up the calibre or completely obstruct certain of these vessels, while in the other the thrombus was not large enough to entirely occlude any of these canals. Dr. Fritz's cases, therefore, strongly support the views of Bouchut, expressed above.

These thrombi also differed from each other a good deal in other particulars besides their size, which will readily suggest themselves to the reader, and thus render it unnecessary to spend much time in their discussion in this place. One point, however, requires special mention, namely, in the first of these cases the great thrombus which occupied the superior longitudinal sinus was unmistakably formed at two distinct epochs. In the anterior half of this sinus it was dark-brown in colour, and resembled a recent blood-clot in appearance. In the posterior half it was grayish-white in hue, and much older in appearance, having existed long enough to become decolourized, as was shown by the broken-down and disintegrated condition of the red corpuscles belonging thereto, which was revealed by the microscopical examination. Besides, it is worthy of remark, that the walls of the thrombosed vessels did not show any signs of inflammatory action in either case.

Dr. Crisp (*Transact. Patholog. Soc. of London*, vol. x. pp. 117, 118) has related the following remarkable instance of what appears to be idiopathic thrombosis of the cerebral veins and sinuses of the dura mater:—

CASE LXI.—The patient was a girl, aged 16, who died after about fourteen days' illness. The symptoms were headache, confusion of intellect, and vomiting, followed by hemiplegia of right side, loss of speech and of power to protrude the tongue, and inability to pass water. Death was preceded by coma. No cause for her attack could be assigned.

Autopsy.—The superior longitudinal sinus was filled with coagulated blood,

interspersed with portions of fibrin closely adhering to the walls thereof. The superior cerebral and cerebellar veins were also extensively thrombosed. The superficial cerebellar veins were nearly all plugged with fibrinous coagula, and all the cerebral veins entering the superior longitudinal sinus were firm and cord-like from the same cause. The upper and lateral portions of the arachnoid were opaque on both sides. The pia mater was rather vascular. The lateral ventricles contained about two teaspoonfuls of reddish serum, and about the same quantity was found under the arachnoid at the upper part of the spinal cord.

The autopsy does not appear to have revealed any cause to which the death of this young girl could be ascribed, other than spontaneous coagulation of the blood in the veins and sinuses belonging to her brain. How does cerebro-venous thrombosis arise in such cases? First of all, the blood itself must be in a condition to readily coagulate, that is, the blood must be more coagulable than natural, or in a morbid state whereby its coagulability is greatly increased. Besides, a protracted stasis of the blood in these vessels, such as might readily attend a passive congestion of the brain, and perhaps also an expanded condition of the cerebral veins and sinuses, such as might be induced by a vaso-motor paralysis of these vessels, would, if present, determine the occurrence of the coagulation. It is not impossible that all these causes combined to produce the thrombosis in the above case.

Dr. Andrew (*Transact. Patholog. Soc. of London*, vol. xvi. pp. 27, 28) has reported an exceedingly interesting case of cerebro-venous thrombosis, which in many particulars resembles the one last related. It illustrates in a striking manner the clinical history and post-mortem appearances of the marasmic variety of this disorder when it occurs in anæmic young women.

CASE LXII.—Eliza S., aged 20, admitted to St. Bartholomew's Hospital March 29, 1865; had enjoyed good health up to twelve months before, when, without apparent cause, her catamenia suddenly ceased, and she began to suffer from anæmia. On admission she was very feeble and anæmic; ankles œdematous; pain in left side; anæmic murmurs in neck, etc. She complained of slight headache, at first frontal, which gradually became more intense, so that on the night of April 3d it kept her awake. On April 4th she vomited several times, and was delirious during the night. On the 5th she gradually became insensible and comatose; pulse 90–120, and slightly irregular. On the 6th, at 10½ A. M., she died.

Autopsy.—Cerebral convolutions flattened, particularly on right side, and marked by impress of the fibres of dura mater. A dark clot, the size of a pea, in posterior part of each hemisphere about half an inch from upper surface. Considerable blood-stained fluid in each lateral ventricle, also a long thin dark clot in right one, lying upon the corpus striatum and optic thalamus. Septum lucidum entire, but soft. Optic thalami unusually prominent; on section, they are found to be œdematous, and studded with numerous small dark clots, by which their substance is broken down, but these changes are more marked in the right than in the left one. The veins of the choroid plexus and velum interpositum, also the venæ Galeni, are distended with firm, partly yellow, fibrinous coagulum. It extends continuously along the straight sinus, and about an inch into the lateral sinuses, but rather further down the right than the left one. It does not completely fill up the calibre of the lateral sinuses, whilst the straight sinus and the tributary veins are greatly distended thereby. The oldest part of the thrombus was found at the junction of the

straight with the lateral sinuses. Here it was of a dull pinkish tint, and somewhat soft. In the other sinuses the blood was almost entirely fluid. Cerebral arteries not diseased. Cerebral substance throughout rather soft and watery. No tubercle in any organ. In each lung several branches of the pulmonary artery were obstructed by old clots, some of which were breaking down at the centre. Beneath endocardium of left ventricle (which was firmly contracted) were numerous large ecchymoses.

The symptoms referable to thrombosis of the cerebral veins and sinuses of the dura mater, which this patient exhibited, were headache, gradually increasing in severity, vomiting, delirium, stupor, coma, and death. Moreover, this disorder appears to have run its whole course in three or four days.

The autopsy revealed cerebral hemorrhage, cerebral œdema, ventricular effusion, and obstruction of the veins of Galen, velum interpositum, and choroid plexus, as well as the straight and lateral sinuses with fibrinous coagulum. But the oldest part of the thrombus was found at the junction of these sinuses. This circumstance shows that the coagulation began in a portion of the cerebral sinuses where the calibre is widely expanded, where the blood-stream is usually sluggish, and where the blood itself would be likely to stagnate on lessening much the power of the heart and arteries to carry on the circulation. The extravasations of blood, which, by the way, were very numerous, the œdema of the cerebral substance, and the effusion into the ventricles, were clearly due to the blocking up of the straight sinus and the tributary veins with thrombus.

It is also worthy of special mention that this young woman was very pale, feeble, and anæmic; that her ankles were œdematous; and that she had anæmic murmurs in the neck ere she was attacked with cerebro-venous thrombosis. In other words, the occurrence of this disorder was preceded by undoubted evidence of blood-disease. In all probability this blood-disease was the principal cause of the thrombosis; for the anæmia or chlorosis doubtless was attended with much diminution in the quantity of red corpuscles and much increase in the white ones, and from this change in the composition of the blood there resulted a considerable increase in its coagulability.

Again, anæmia and debility the result of *excessive bloodletting* sometimes lead to coagulation of the blood in the cerebral veins and sinuses of the dura mater, especially in persons who are predisposed to this disorder. It is scarcely necessary to say that these cases are very important in a practical point of view. Von Dusch presents two rather striking instances, of which the following is a brief account:—

A lying-in woman, aged 23, was attacked by peritonitis twice during the first week after delivery, for the cure of which copious local bleeding was repeatedly employed during nine days. Twice, forty leeches were applied, and, on two other occasions, twenty, making in all one hundred and twenty leeches. A fortnight after delivery headache and vomiting appeared, followed by hemiplegia. Great restlessness and screaming supervened, then coma, and finally, death three weeks after delivery. It must be added that, in consequence of the new symp-

toms, she was bled once in the arm, and had fifteen more leeches applied on various occasions.

Autopsy.—The superior longitudinal sinus was seen to be very much distended, and of a glittering blackish appearance. It was filled up by a thrombus, in the centre of which there was a puriform fluid, resembling wine-lees. The right lateral sinus also was blocked up, in the direction of the jugular vein, by a firm coagulum which contained a similar fluid. The other sinuses were quite normal. There were ecchymoses in the gray matter on the surface of the brain, especially in the course of the thrombosed veins on the convex surface and at the base. In the true pelvis two collections of pus were found, and, in the veins of the uterus, corresponding to the place where the placenta was attached, very firm, small, black plugs. In the chest there was nothing abnormal (*op. cit.*, 108).

In this case thrombosis of the cerebral veins was the cause of death. It occurred because the coagulability of the blood was greatly increased on the one hand, and the heart-power was greatly diminished on the other. The abnormal coagulability of the blood, however, was due in part to the puerperal condition of the patient, and in part to the excessive losses of blood by leeches and venesection to which she was subjected, for it is well known that the puerperal state is usually attended with a considerable increase in the coagulability of the blood as a consequence of hyperinosis, and that copious bloodletting generally causes a great increase in the coagulability of the same fluid. But excessive bloodletting also weakens the action of the heart, and thus assists more or less strongly in producing cerebro-venous thrombosis in such cases as the foregoing.

The other case claims affinity to the last in one important respect, namely, in it the formation of thrombus in the sinuses of the dura mater was also due, to great extent, to colossal bloodletting.

A soldier received a gunshot wound of the left parietal bone, which produced fracture with depression. The symptoms which supervened rendered trephining necessary. The patient was also bled five times in a short period. Death occurred on the thirteenth day.

Autopsy.—Fleshy coagula were found in the left lateral sinus, and smaller ones of similar appearance in the superior longitudinal and right lateral sinus. There were also fracture of the inner plate and purulent arachnitis (*op. cit.*, pp. 109, 110).

If in this case the formation of the thrombus had been induced by the arachnitis, one or more of the contiguous veins of the pia mater would pretty certainly have been found thrombosed, and, in all probability, the thrombus itself would have been discovered to be broken down, and undergoing puriform softening, as usually obtains in venous thrombosis connected with suppurating parts. It is therefore highly probable that the arachnitis had but little, if anything, to do with the production of the thrombosis. However, the injury itself, and the operation of trephining, doubtless were concerned in producing it; but this circumstance should not lead us to overlook the influence which five venesections, all performed within a short period, must exert in the way of increasing the coagulability of the blood, thereby promoting the occurrence of venous thrombosis in the neighbourhood of the injured part; besides, these venesections must

have weakened the heart-power considerably. We must therefore look upon excessive loss of blood by venesection as an important, if not the chief, cause of the thrombosis of the cerebral sinuses which occurred in this case, and its importance, in a practical point of view, is not diminished by the fact that it was entirely preventable.

The *syphilitic cachexia*, and syphilitic diseases of the brain or its membranes, are sometimes attended by the formation of coagula in the cerebral veins and sinuses of the dura mater, whereby these vessels become more or less completely obliterated. Von Dusch does not mention this form of cerebro-venous thrombosis. It is, therefore, incumbent upon us to give particular attention to this point. Dr. Murchison (*Transact. Patholog. Soc. of London*, vol. xiii. pp. 250-253) has reported two cases, one of which certainly, and the other probably, comes under this head. The following is a much condensed account of them :—

CASE LXIII.—The subject was a woman, aged 27, who died of syphilitic cachexia, at the Middlesex Hospital. After complaining of vertigo, dimness of sight, and headache for a time, she got epileptic fits, but her consciousness remained clear almost to the last. On *autopsy* there were found extensive syphilitic deposits on the dura mater, moderate injection of the pia mater, numerous puncta vasculosa, and thrombosis of the sinuses of the dura mater, in addition to other lesions. The sinuses were full of dark soft coagulum.

The writer infers from the symptoms which presented themselves during life, and from the appearances which the thrombus exhibited at the autopsy, that it was formed during the closing hours of life. Nevertheless, it may have played an important part in producing the fatal result.

CASE LXIV.—The other patient was also a woman, aged 36, who, after having had repeated attacks of copper-coloured eruptions, periostic nodes on cranium, intense pain in forehead and occiput aggravated at night, was attacked with “fits” and died a fortnight later at the Middlesex Hospital. The “fits” commenced with a scream, and were attended with loss of consciousness, but not by foaming at the mouth, nor by convulsive movements. The “fits” increased in frequency and severity until she died, while, in the intervals, she had intense pain in the forehead and occiput.

Autopsy.—Pericranium thickened in spots. Bones of skull generally thicker and denser than natural, etc. While removing the brain the left hemisphere of the cerebellum was found so firmly adherent to the dura mater, that a portion was torn off and left behind. The dura mater in rear of the petrous portion of temporal bone, and on the occipital as far as the mesial line, was greatly thickened by the deposit on its inner surface of flattened masses of a firm yellowish-white substance, exhibiting a smooth surface on section, and yielding no juice. This deposit extended at some places fully half an inch under the tentorium at its attached margin. The left lateral sinus passed through the diseased mass, and its canal was quite obliterated. There was an evident connection by continuity between the disease of the dura mater and the periostic nodes external to the bone.

It seems highly probable to the writer that in this woman's case the obliteration of the left lateral sinus was effected through the agency of a thrombus, and that the formation of the thrombus itself was due in part to syphilitic pachymeningitis and in part to syphilitic cachexia.

Analogous in some respects to the last group are those cases wherein a *fungous tumour of the dura mater* causes the blood to coagulate in one or more of the cerebral sinuses.

Mr. Forster (*Transact. Patholog. Soc. of London*, vol. ii. pp. 162, 163) has recorded the following case in which thrombosis of the right lateral sinus resulted from the above-mentioned affection of the dura mater :—

CASE LXV.—A strumous lad, aged 18, was knocked down by a cab, and struck on the right side of his head nineteen months before death. Soon afterwards he became deaf and suffered severe pain. The part became slightly swollen and excessively tender, especially over the mastoid process; paralysis of the right facial nerve also took place. No great change occurred until the last six months, when from another blow on the same spot, the disease grew more active. The side of his head from above the temporal ridge to two inches below the ear, became enormously enlarged and tender; the external ear appeared to be pushed away from the side of his head. He experienced great difficulty in swallowing solid food, and was also unable to speak. About two months before death the swelling began to fungate and slough. Profuse hemorrhage occurred at intervals. The sloughing extended very rapidly, and at last laid the pharynx bare. No brain symptoms appeared. The hemorrhage and the suppuration, which also was profuse, quickly destroyed him.

Autopsy.—The tumour which caused the swelling was developed from the dura mater. The temporal bone was carious and extensively destroyed in consequence of the pressure exerted by the tumour. No vestige of meatus or mastoid cells could be found. The lateral sinus was filled with a coagulum.

No head-symptoms resulted from the thrombosis in this case because it was limited to one lateral sinus, and, therefore, the blood could for the most part, readily find its way out of the brain through the other lateral sinus, etc.

In cases such as this it has been customary to ascribe the formation of thrombus to compression of the affected sinus resulting from the growth of the tumour. Von Dusch (*op. cit.*, p. 103) quotes a case from Virchow, in which there was a large cholesteatoma in the left petrous bone, and at the same time thrombosis of the left lateral sinus, etc.; but the patient had also had otorrhœa for twelve months, and when we consider the intimate relationship which has in another place been shown to exist between disease of the internal ear and thrombosis of the corresponding lateral sinus, we are lead to refer the causation of the thrombosis in Virchow's case to the ear-disease quite as much as to the tumour. Indeed, Von Dusch perceived this point, for he remarks that although the formation of thrombus in the cerebral sinuses as a consequence of compression, etc., seems *a priori* very probable, "the few cases to be met with in the literature of the subject for the most part indicate other sources." So too in the case related above, the writer thinks that the formation of the thrombus should be attributed to the marasmic state of the patient which resulted from the hemorrhages and the suppuration, rather than to any diminution in the calibre of the sinus which may have been produced by the fungous growth.

Anæmia and debility, the result of *chronic disease of the rectum*, sometimes proves fatal by inducing cerebro-venous thrombosis. Dr. Ogle (*Transact. Patholog. Soc. of London*, vol. vi. pp. 31, 32) has reported a case of this sort, in which several cerebral veins and sinuses of the dura mater were occluded by dense fibrinous clots that were traceable to a spon-

taneous tendency in the blood to the deposition of fibrin. The following is a brief abstract thereof:—

CASE LXVI.—The patient was a woman, who gradually sank in St. George's Hospital, whither she had been brought for long-continued disease of the rectum. The symptoms exhibited towards the close of life were those of asthenia, and nothing pointed to disease of the brain, excepting that a short period before death, she completely lost the faculty of speech, the mind being unaffected.

The *autopsy* showed the presence of much blood-stained fibrin which blocked up the left lateral sinus, the inferior longitudinal sinus to a certain extent, the straight sinus, most of the venæ Galeni, the left petrosal sinus, and several veins which pass into the above-mentioned sinuses from the sides and base of the cerebral and cerebellar hemispheres. The coagulum did not extend beyond the posterior jugular foramen. The subarachnoid tissue and the ventricles contained much fluid, but the substance of the brain and its membranes were natural. No marked lesion of any organ excepting the rectum was found, and no collection of purulent matter existed in the body.

Other exceedingly chronic diseases may in adults, as well as in children, as we have elsewhere shown, so far as the latter are concerned, bring about a state of marasmus with increased coagulability of the blood and the formation of thrombi in the cerebral veins and sinuses of the dura mater. Von Dusch (*op. cit.*, pp. 107, 108) presents a case in point, wherein a man, aged 53, who had old hepatic and renal disease, with cough and copious expectoration, ascites, anorexia, and loss of strength, got diarrhoea with involuntary evacuations, accessions of unconsciousness, and thus died. On *autopsy* there were found cirrhosis of the liver, degeneration of the kidneys with cysts and concretions, thrombosis of the superior longitudinal sinus and of some of the corresponding veins of the pia mater, etc. The lungs were cedematous, and the pulmonary arteries contained obstructive plugs. Again we remark that any chronic disease which produces a cachectic state, and increases the coagulability of the blood as well as weakens the action of the heart and arteries, may in like manner lead to cerebro-venous thrombosis in adults as well as in children.

But diseases which run a comparatively short course—diseases which are by no means chronic—such for example as pneumonia, pleurisy, typhoid fever, etc., may also cause the blood to become abnormally coagulable and clots to form in the cerebral veins and sinuses of the dura mater in both adults and children. The following case reported by Dr. Ogle (*Transact. Patholog. Soc. of London*, vol. x. pp. 30, 31) comes under this head:—

CASE LXVII.—A man, aged 26, entered St. George's Hospital for pneumonia of left side (a relapse?). His pulse was very feeble and debility great. Afterwards he complained of intense pain in the head, especially in the back part thereof, and subsequently in the left temple. He was treated with wine and other stimulants. About five weeks after admission, he was found one morning in bed totally unconscious, and deprived of all power of moving the left arm and the left leg. He lay three days in a state of half-stupor and then died.

Autopsy.—The superior longitudinal, left lateral, and left petrosal sinuses were found plugged up by firm, and for the most part reddish-brown coagulum, which generally adhered pretty firmly to their walls; but in one or two places

was diffuent and broken down into a grayish-brown grumous fluid. Several veins of the pia mater, both small and large, which empty into the sinuses, contained brown adherent clots, but none of them were softened. The veins on the right cerebral hemisphere were very much engorged. The left arachnoid sac contained a considerable amount of yellowish purulent fluid mixed with soft fibrinous material. Brain-substance slightly softened at the postero-inferior part of middle lobe of left cerebral hemisphere. An abscess about the size of a hazel-nut, existed about one-third of an inch from the surface at this spot. A large amount of turbid fluid in the lateral ventricles. The lungs showed evidences of recent pneumonia. In one or two places the pulmonary tissue had given way, accumulations of purulent matter having formed.

Von Dusch mentions an analogous case:—

The patient was a servant girl, aged 20, who was attacked with pleuro-pneumonia while suffering from typhoid fever. Contraction of the cervical muscles, convulsions of right side, and coma supervened; death ensued. The cerebral veins, superior longitudinal and lateral sinuses were found extensively obstructed with firm adherent coagula.

In both of these cases the cerebro-venous thrombosis which was developed after the occurrence of pneumonia may fairly be regarded as a result of marasmus, unless we consider the cerebral affection to be metastatic, an assumption, however, which appears much more forced.

The case of a young girl, aged 12 (already referred to), who died of a cerebro-venous thrombosis which came on at an advanced stage of typhoid fever, belongs to the same category as the above. In this case clonic and tonic convulsions, with loss of consciousness, but not of sensibility, suddenly supervened. These phenomena lasted an hour. A fresh accession soon occurred, with trembling of the muscles which lasted till death. The convulsions were followed by coma and contracted pupils. On *autopsy* the whole of the superior longitudinal sinus was found obstructed by a coagulum, everywhere adherent and partially decolourized, as also the veins of the pia mater communicating with it, etc.

Again, thrombosis of the cerebral veins may occur in connection with thrombosis of the veins of the extremities and pyæmia, as it did in the case which Dr. Janeway brought before the New York Pathological Society, April 8, 1868 (*Medical Record*, July 15, 1868).

CASE LXVIII.—The patient was a news-boy, aged 16, who entered Bellevue Hospital on the morning of April 4th, giving an imperfect history to the effect that three days before he observed on waking in the morning an "injury" to his right forearm, near the wrist, and saw a physician that day who applied splints. On entering the hospital these were removed and evaporating lotions applied. At that time he exhibited no cerebral symptoms, but in the evening he was slightly delirious, though he still walked about the ward. The next morning his condition was about the same; towards night, however, he became comatose, and so remained until death occurred at 10 P. M. the following day, April 6th. While in this state his pulse was 120 to 130, and respiration about 40.

Autopsy.—Forearm and hand œdematous. A fluctuating tumour at the wrist contained a quantity of sanious pus, that had burrowed among the tendons down to the bone; periosteum thickened and vascular, but not detached. The outer one of the radial venæ comites contained, in the middle of its course, a firm clot about two inches in length; the inner one, a whitish clot of soft consistence from commencing disintegration. The basilic and axillary veins, with the

brachial venæ comites, were distended throughout their course with soft coagulum. On the brain, chiefly on its convexity, many small opaque spots were seen in the arachnoid and pia mater, the result of thickening. Each of them was surrounded by a red border, due sometimes to congestion, sometimes to extravasation. The brain-substance showed several points of hemorrhage. *Three of its larger veins contained attached fibrinous clots*, evidently formed some time before death. In the lungs were hemorrhagic infarctions and so-called metastatic pneumonia and pleurisy. In the left ventricle were many fresh signs of ulcerative endocarditis. Numerous small white points surrounded by red areolæ, similar to those found on the arachnoid, were also found on the exterior of the heart, on the liver, in the kidneys, and small intestines. Prostate, bladder, etc., normal.

This boy's illness was of less than six days' duration. It ended fatally by coma, that is, death began at the brain. The case itself is an unusual one, and possesses three features of intense interest and great importance. They are, *firstly*, the abscess at the wrist with the accompanying thrombosis of the veins of the forearm, etc., and the pyæmic lesions of the lungs; *secondly*, the ulcerations and other changes in the left ventricle of the heart, and the multitude of white points surrounded by inflamed areolæ which were found on the surface of the brain, liver, kidneys, small intestines, and heart itself, that probably had been produced by the lodgment in the capillary arteries of these parts of minute emboli that had been washed out of the left ventricle by the blood-stream; and, *thirdly*, the obstruction of several cerebral veins of large size, with thrombus, and the occurrence of coma and death in consequence of this obstruction. It is probable that the patient would have lasted some time longer if thrombosis of the cerebral veins had not taken place. Moreover, the plugging up of these vessels was attended with the extravasation of blood at several points in the brain-substance. This case, then, serves an admirable purpose for illustrating thrombosis of the cerebral veins, thrombosis of the veins of the extremities, and capillary embolism, the result of ulcerative endocarditis.

Lastly, we have to point out that thrombosis of the cerebral veins and sinuses is an occasional consequence of *senile marasmus*. Cruveilhier (*Anat. Patholog. du Corps Humain*, liv. 36, pp. 2, 4, 5) relates two cases of this sort. One of them was that of an old woman of weak intellect, who died after twenty-four hours' coma. The superior longitudinal sinus and the veins communicating therewith were filled with a brilliant, black, adherent thrombus, and the gray substance of the cerebral hemispheres contained numerous capillary hemorrhages, etc. The other case was that of a woman, aged 80, who after having paralysis of the left half of the body, excepting the tongue and face, for some time, got paralysis of the right side, and thus died. The superior longitudinal and lateral sinuses were blocked up by thrombus, and the superior cerebral veins were also filled with plugs. In the arachnoid sac a fresh extravasation of blood was spread out over the convex surface of both hemispheres, etc.

A case related by Dr. Charcot (*Boucharde on the Pathology of Cerebral Hemorrhage*, pp. 16, 17, London, 1872) is in point. In it, however, the cerebro-venous thrombosis was due in part to senile marasmus, and in part to the depressing influence of disease.

CASE LXIX.—A female, aged 65, had pneumonia in 1858, and again in 1863. In the summer of 1865 she was under treatment for cirrhosis and ascites. On August 21st, she suddenly became paralyzed on the right side. On the 23d, at 2 A. M., she became comatose; at time of visit her breathing was stertorous, pulse small and frequent, skin warm. The limbs were all flaccid; reflex movements on both sides abolished. At 4 P. M. she died.

Autopsy.—Extensive subarachnoid hemorrhage on both cerebral hemispheres, more abundant, however, on the right than on the left one. Dark-coloured very friable clots filled up each lateral ventricle. The floor of the left one was the seat of yellow softening throughout. The left optic thalamus presented a reddish pulp on its surface, consisting of blood mixed with softened cerebral tissue. A patch of red softening was also found on the left hemisphere behind the convolution which bounds the fissure of Rolando. The gray matter had the colour of wine-lees, and the white substance beneath was softened and slightly yellowish. Another patch of red softening was found on the right hemisphere behind the fissure of Rolando, but it was smaller than the preceding. The arteries of the base were not atheromatous. On the surface of the clots which covered the inner aspect of both cerebral hemispheres two veins that emptied into the superior longitudinal sinus were seen to be stretched; they were yellowish in colour, and contained old clots. Liver cirrhotic; peritoneal cavity distended with yellowish serum.

The cerebral hemorrhage and cerebral softening were doubtless occasioned by thrombosis of the cerebral veins. It is also worthy of remark that cerebral or meningo-cerebral hemorrhage occurred in both of the other cases of senile thrombosis of the cerebral veins and sinuses of the dura mater mentioned above. From this circumstance we infer that when cerebro-venous thrombosis occurs in old persons, it is especially prone to occasion cerebral hemorrhage, and this relationship may be accounted for by the fact that the walls of the bloodvessels in general, usually become weakened by atheroma, fatty degeneration, etc., with advancing age.

But, in the last case, the longitudinal and other sinuses of the dura mater did not contain any coagula; and thus it is conclusively shown that thrombosis of the cerebral veins, attended with very striking morbid changes and consequences, may occur without there being any thrombosis of the corresponding sinuses of the dura mater. In Dr. Janeway's case LXVIII, also, certain of the cerebral veins were obstructed with thrombus while the sinuses remained free, and still cerebral hemorrhage was present. The reader's attention is specially called to this point, because it is a new one, and possesses considerable interest, at least for pathologists.

Etiology.—The clinical histories related above, and in the preceding paper, show pretty clearly that in one set of cases the blood coagulates in the sinuses of the dura mater as an immediate consequence of cranial injury, especially when the sinus-walls themselves are implicated, that in another set of cases the blood coagulates in these vessels as a result of various inflammatory affections of the head, internal ear, eye-socket, nose-cavity, and

face, and that in still another set of cases the cerebro-venous thrombosis is occasioned by wasting diseases or debilitating influences. Thus, we find that this disorder presents three important varieties, in respect to causation, namely, the *traumatic*, the *inflammatory*, and the *marasmic*. Some of them, however, occur much less frequently than others. For example, in looking over the 58 cases presented by Von Dusch, I find but 2 in which the origin was directly traumatic, while in 34 the causation was inflammatory, and in 22 marasmic. Besides, out of 72 additional cases collected by myself the thrombosis had a traumatic origin in only 4 instances, an inflammatory starting point in 52, and a marasmic origin in 16 patients. Finally, in a grand total of 130 cases, thus obtained, we have but 6 in which the coagulation resulted directly from traumatic causes, 86 from inflammatory lesions, and 38 from marasmic conditions, or debilitating influences. From this it appears that the inflammatory is by far the most common form of cerebro-venous thrombosis, inasmuch as it has been met with considerably more than twice as often as the marasmic, and rather more than fourteen times as often as the traumatic. Dr. Lancereaux, however, states that of 74 cases collected by himself 39 were inflammatory and 35 non-inflammatory in respect to origin; but he has doubtless overlooked many of the inflammatory cases which have rewarded my researches, and therefore his statement does not disprove the conclusion arrived at above.

1. *Causes of the Traumatic Variety.*—Concerning the formation of the coagula which are occasionally met with in the sinuses of the dura mater after injuries of the skull, Virchow has already pointed out that in some cases the coagulation probably begins in the wounded veins of the diploë as a consequence of the atmospheric air coming into contact with the blood at the gaping orifices in these vessels; for the nature of the veins of the diploë is such, and their walls are so firmly attached to the surrounding bone, that they cannot collapse, and, therefore, in cases of compound fracture of the cranium, with depression, gaping apertures may readily present themselves in the veins of the diploë through which a hemorrhagic thrombus formed externally to them may easily extend into their calibre, and thence by further prolongation may penetrate the corresponding sinus of the dura mater. In other cases, however, the formation of coagulum in the sinus is due to the fact that some foreign body, such, for example, as a fragment of the inner table of the skull, has been driven into the calibre of the sinus, and that the blood, on coming into contact with this foreign body, coagulates around it, as crystals form around foreign bodies when suspended in crystallizable liquids. This is precisely what happened in a case quoted from Schmucker by Von Dusch, wherein a splinter from the vitreous plate half an inch long penetrated the superior longitudinal sinus, and that vessel soon became plugged up with a firm

thrombus, which afterwards, to a considerable extent, underwent puriform disintegration or softening.

But thrombosis of the cerebral sinuses does not occur in all the cases wherein the part of the cranium which overlies the vessels in question is fractured in such a manner as to expose the lacerated veins of the diploë to atmospheric action, nor in all the cases wherein a foreign body is driven into the calibre of a sinus, nor in all the cases wherein the walls of a sinus happen to be wounded. On the contrary, it occurs in only a small portion of these cases, as is clearly shown by the records of clinical experience, such, for example, as M. Lassus's *Memoir on Wounds of the Superior Longitudinal Sinus* (already referred to), various of the treatises on cranial fracture, the current annals of clinical surgery, etc.

Now, why does thrombosis occur in some cases where the sinuses of the dura mater, or the parts covering them, are wounded, and not in other cases where the lesions are strictly analogous? This difference must be ascribed to an abnormal tendency on the part of the blood itself to coagulate, which is present in one set of cases, and not in the other. Indeed, it is possible that traumatic thrombosis of the cerebral sinuses never occurs unless the coagulability of the blood itself happens to be considerably increased, or the condition of the blood in respect of readiness to coagulate is analogous to that which various crystallizable solutions must possess in order for crystals to form.

If this view is correct, of which there seems to be but little if any doubt, abnormal coagulability on the part of the blood itself must be looked upon as the predisposing cause, and fractures which lay open the veins of the diploë or the walls of the sinuses, together with the curdling action of the atmosphere on the blood at the gaping apertures in these vessels, as well as the presence of foreign bodies in the calibre of the sinuses, must be considered as the exciting causes in most instances of *traumatic* cerebro-venous thrombosis. I may here remark that I am acquainted with but one or two forms of local injury which lead the blood to clot in the larger veins during life when its coagulability is not increased, and they produced by the application of ligatures, and by amputation. In such cases the blood coagulates because all motion in it has been arrested over a certain space, and the coagulum usually extends from the place of ligation as far as the nearest collateral tributary having some considerable size. This is the simplest of all the forms of thrombosis.

In like manner coagula form in certain of the veins when they have been divided, as, for example, in the operation of amputation. I remember, however, one thigh-stump in which I found on dissection that the femoral vein was occluded with blood-clot, not beginning at its cut extremity, but at the first valve above the cut extremity and extending therefrom up to the next tributary, the cut end being empty and contracted for about three-fourths of an inch. In like manner also coagula would form in the cerebral veins

and sinuses of the dura mater should the blood-stream therein be arrested by mechanical violence or traumatic agencies in any way analogous to the above. Under such circumstances it is only the portion of the blood which is completely stagnant, that coagulates, unless perchance the coagulability of the blood itself, at the same time, happens to be considerably increased.

2. *Causes of the Inflammatory variety of Cerebro-venous Thrombosis.*—A perusal of the cases belonging to this class which are related or referred to in the first part of this essay shows very clearly that some local inflammatory disorders of the head, or of the parts contained therein, much oftener give rise to thrombosis of the cerebral veins and sinuses of the dura mater than others. For example otitis interna was the starting point of this affection in 33 instances; facial anthrax, in about 30; facial erysipelas, in 3 (including 1 to be related hereafter); ozæna, in 2 (including 1 to be related hereafter); traumatic caries of the skull, in 3; traumatic inflammation of the skull and neighbouring parts without caries, in 2; suppurating wounds of the scalp, the skull being uninjured, in 1; suppurative diseases of the hairy scalp, such as chronic eczema, etc., in 2; idiopathic abscess of the eye-socket, in 3; extensive purulent infiltration following suppurative parotitis, in 1; purulent meningitis, in 4 cases, and this disorder was probably the starting point of the thrombus-formation in several other instances. Thus, it appears that although a considerable variety of inflammatory affections may produce thrombosis of the cerebral sinuses, suppurative inflammation of the ear and carbunculoid or furunculoid inflammation of the face occasion this disorder much more frequently than all the others put together, namely, in about three-fourths of all the cases. Now let us inquire more closely into the method by which internal otitis, on the one hand, and facial anthrax, on the other, bring about the formation of coagula in the sinuses of the dura mater; and, after that, ascertain, if we can, the reason why these diseases are so much more apt to be followed by cerebro-venous thrombosis than the other suppurative inflammations which so frequently attack the parts entering into the composition of the head.

With regard to suppurative otitis, it was found that in 29 out of the 33 cases above mentioned, disease of the temporal bone in the shape of caries or necrosis was the connecting link between the affection of the ear and the affection of the sinuses. It is probable that in these cases the disease of the bone caused the blood to coagulate in the minute veins of the diploë in the first instance, and that these small coagula afterwards extended themselves by prolongation until they entered and occluded the corresponding veins of the dura mater. In giving the rationale of this occurrence Von Dusch justly observes: "In thrombosis of the sinuses, the result of caries of the bones of the skull, the peculiar conditions of the veins of the diploë [that is, their uncontractile state and gaping apertures

above-described], also appear to me to play an important part. The necrosis of the individual layers of bone, resulting from the process of ulceration in the bone, must necessarily diminish the supply of blood from the bone to the large venous trunks, and it will even happen in many instances that the supply of blood from the bone to certain of these is completely arrested. But as a shrinking of the calibre of these vessels is impossible, as already remarked, the diminished or arrested supply of blood leads to stagnation, and the formation of thrombus in them, which may extend into the sinus. We should thus have to regard the thrombus in the sinuses in such cases as propagated, that in the small veins of the diploë as primary and dependent upon the comparative excess in their calibre" (*op. cit.*, pp. 100, 101).

But caries (or necrosis) of the petrous portion of the temporal bone is not always the connecting link between internal otitis and thrombosis of the cerebral sinuses, for among the cases related above are four in which internal otitis produced thrombosis of these vessels without the intervention of either caries or necrosis. In these four cases the starting-point of the clot-formation appears to have been the inflamed and suppurating part of the ear, or rather some of the venous radicles belonging to this part. One of Dr. Dickinson's cases, also related above (see Case XIV.), clearly illustrates this point. At the autopsy of this case a small vein which passed directly from the diseased tympanum into the right lateral sinus was found filled with coagulum and converted into a solid cord thereby. Thus, it appears that in this case a thrombus whose formation commenced at the suppurating tympanum extended itself along the canal of a small vein, in a direct manner from the tympanum into the corresponding lateral sinus, which in the end it completely filled, occasioning also a secondary phlebitis therein.

In a manner closely analogous to this does facial anthrax, as well as facial erysipelas, ozæna, etc., produce thrombosis of the cavernous and other sinuses. In such cases the process of coagulation commences in some minute branch or branches of the facial or frontal vein which are in relation with the suppurating parts, and travels along the facial or frontal vein and its anastomoses into the ophthalmic vein, and so on, into the cavernous sinus.

The correctness of this statement is clearly proved by the post-mortem records of the cases of facial anthrax, etc., related above. For example, the autopsy in Case XXI. revealed an abscess as large as a small nut in left part of upper lip; surrounding tissues infiltrated with matter; a branch of the facial vein extending from the abscess to the inner canthus of the left eye contained thin matter throughout; it anastomosed with the ophthalmic vein. The latter vein and the cavernous sinus were filled with a thick, chocolate-coloured liquid, containing streaks of puriform matter. The walls of these vessels were inflamed. The affection extended

through the circular sinus to the right cavernous. The autopsies in Cases XXIII., XXV., XXVI., XXXVIII., XL., and L. strongly support the same view; and the autopsy of no case supports a different view of the method by which facial anthrax and facial erysipelas produce thrombosis of the cerebral sinuses. In the account of Dr. Blachez's case of ozæna (Case XLIX.) also, it is distinctly stated that the thrombosis and secondary phlebitis were traced, at the autopsy, to the nasal ulceration as the starting point.

With regard to the other, or the remaining forms of inflammation and abscess of the head and face which have occasionally led to the occurrence of thrombosis of the cerebral veins and sinuses of the dura mater, Von Dusch aptly says: "A similar view may be taken of extensive sanious inflammations of the cellular tissue, inflammations, which, as is well known, easily lead to phlebitis of larger venous trunks and to the phenomena of pyæmia and metastatic deposits. In such phlegmonous inflammations a greater or less extent of venous radicles is, for the most part, soon destroyed by the inflammatory process, which rapidly spreads and leads to necrosis of the tissues, whereby the supply of blood to the smaller venous trunks is diminished or completely arrested, and stagnation of the blood in them takes place from the absence of the *vis à tergo*. It may, indeed, more readily occur here than in the veins of the diploë that these small vessels collapse and propel their contents into the next branch, by which means the formation of a thrombus in them would be prevented. This may also be the reason why phlebitis does not always ensue in such cases. But if the inflammatory process produces solid infiltration and thickening of the tissues around these small veins, it will happen here, as in the veins of the diploë, that, the supply of blood being diminished, the unyielding nature of the vessels will furnish conditions favourable to the formation of thrombus. These small thrombi grow, and finally reach the larger trunks, and phlebitis ensues in the latter.

The reason why this consequent [or secondary] phlebitis mostly leads to suppuration and destruction of the coats of the vein, and but seldom assumes the so-called adhesive form, lies in the deleterious nature of the thrombus, which, arising in a deposit of various products of decomposition, conveys these by imbibition into the larger vessels" (p. 101). According to this view the formation of coagula in the small veins during life must be regarded as a consequence of stagnation of the blood therein, while those in the larger veins may be represented as occasioned by propagation therefrom; and the accompanying inflammation of the vein-walls may also be looked upon as secondary. Inflammation of the outer coat of the small veins could only be assumed to be a determining cause for the formation of thrombus in so far as the infiltration or induration of the connective tissue around them might prevent the collapse of their walls.

This view is by no means a new one, and allusions to it may be found in

the very suggestive *Rational Pathology* of Henle (ii. 516, 517), who did not overlook the favourable conditions for the formation of thrombus which exist in the non-contractile veins as well as in the sinuses of the dura mater, in the veins of bone, and in veins whose coats are paralyzed, or thickened, or indurated. Henle also remarks that in cases where the blood stagnates in the capillaries from diminished *vis à tergo*, the blood may also lose its motion and coagulate in the veins which spring from these capillaries, and thus phlebitis may result from stagnation in the capillaries. In brief, the method by which various inflammatory disorders of the head and face cause the blood to coagulate in the sinuses of the dura mater and the walls of these vessels to become inflamed, is as follows: In the cases which belong to this category the process of blood-clotting usually commences in some small vein or veins connected with the seat of inflammatory change, as a consequence of blood-stasis therein, and afterwards the coagula extend themselves by prolongation until they reach and occlude the sinuses; and these consecutive thrombi generally undergo puriform softening or disintegration instead of organization, because they have their origin in the decomposing products of the primary inflammatory lesion, the more fluid portions of which are conveyed into the larger vessels by imbibition. The disintegrating thrombi act upon the sinus walls like other deleterious substances, and like foreign bodies in general, and thus cause them to become inflamed.

But the starting-point of the thrombosis was found to be either internal otitis or facial anthrax in about three-fourths of all the cases having an inflammatory origin which I have collected, as stated above. Now why are internal otitis and facial anthrax so much more liable to be followed by thrombosis and phlebitis of the cerebral sinuses than the other suppurative inflammations which attack the parts entering into the composition of the head? These are questions of great practical moment, since the indications for the preventive treatment hang thereon, and we shall endeavour to answer them as fully as we can.

Firstly, with regard to internal otitis. The first cause which we are likely to assign is increased coagulability on the part of the blood itself. No doubt this liquid is abnormally coagulable in all the cases where thrombus forms in the sinuses of the dura mater in consequence of local inflammatory processes; for it is difficult to understand why a few patients having suppurating sores on the scalp, or orbital abscess, or facial erysipelas, or ozæna should get cerebro-venous thrombosis, while the many who suffer from these affections entirely escape, unless the blood is more disposed to clot in the veins of the former than it is in those of the latter. But granting this, the question then arises why otitis interna so much more frequently causes the coagulability of the blood to be increased than the above-named affections, although they are vastly more common than otitis interna?

The last-mentioned circumstance naturally leads us to suspect that the

discrepancy is due to some peculiar features of the morbid process which are generally present in the cases of otitis interna, and are, for the most part, not present in the other cases, such as the occurrence of caries or necrosis on the one hand, and the production of a highly deleterious pus on the other. Now, although caries or necrosis of the skull was present in twenty-nine of the thirty-three cases related or referred to above, in which otitis was attended with thrombosis of the cerebral sinuses, the occurrence of the last-named disorder cannot justly be ascribed to this caries or necrosis, *per se*, because these affections of bone are very often produced in the walls of the cranium by other causes, and when they are so produced they very seldom give rise to cerebro-venous thrombosis; for example, caries or necrosis of the skull was found to be connected with thrombosis of the cerebral sinuses, in all, in thirty-six cases that are related or referred to above, but out of these the caries or necrosis was due to internal otitis in twenty-nine, and to all other causes in only seven instances, while caries or necrosis of the skull is much less frequently produced by internal otitis than by other causes, such as struma, syphilis, injury, etc. In other words, cranial caries or necrosis occurs much oftener unconnected with inflammation of the ear than it does as a result of this disease, but is, at the same time, four times more liable to be attended with thrombosis of the cerebral sinuses when produced by internal otitis than when it results from all other causes combined.

The same question then presents itself in another form, namely, why is caries or necrosis of the skull so much oftener attended with cerebro-venous thrombosis when produced by internal otitis than when produced by other causes? To this some may reply that in cases of ear-disease the caries or necrosis occurs in the pars petrosa of the temporal bone, that is, in a portion of the skull which is closely connected with the lateral sinus; but this answer is not satisfactory, because caries or necrosis is fully as often, perhaps oftener, met with in parts of the skull which bear an equally close relationship to the superior longitudinal and other sinuses of the dura mater, and that, too, without leading to the formation of thrombus in these vessels, except in occasional instances, as is already proven by statistics given above as well as by the records of clinical experience and the observations of practising surgeons in general.

We are, therefore, compelled to attribute this remarkable proclivity on the part of otitis interna to occasion thrombosis of the cerebral sinuses, not to the caries or necrosis of the temporal bone with which it is so often attended, but to something peculiarly deleterious in the purulent matter which is formed by this disease. Furthermore, it is well known to every one acquainted with the subject that, in cases of inflammation of the ear, the discharge is oftentimes dreadfully offensive. Finally, we infer that the remarkable proclivity on the part of internal otitis, above mentioned, is due to the presence of some peculiar ichor or acrid sanies in the purulent

secretion, a result perhaps of putrefactive changes, which causes the blood to coagulate first in some of the small veins connected with the seat of inflammatory change, and afterwards in the sinus of the dura mater, wherein they empty, which also permeates the thrombus by imbibition, causing it to undergo disorganization instead of organization, and the vein or sinus walls to become correspondingly inflamed. And it is highly probable that thrombosis of the cerebral sinuses was produced in the same way in some at least of the four cases of internal otitis related in the first part of this essay, wherein thrombosis of these vessels occurred without the intervention of caries or necrosis.

Again, with regard to facial anthrax. It was found, as already stated, that in about 30 of the cases having an inflammatory origin, the thrombosis of the cerebral sinuses resulted from furunculoid or carbunculoid disease (anthrax) of the face; that in every one of these cases where the veins proceeding from the anthrax were subjected to examination at the autopsy, their calibres were filled with softening thrombi and their walls were inflamed; and that the progress of the thrombosis and phlebitis was traceable through these vessels from the anthrax to the ophthalmic vein and cavernous sinus, and in occasional instances also downwards into the veins of the neck. We have likewise shown that furunculoid and carbunculoid inflammation of the face is a very fatal disease. Out of 28 cases mentioned in the first part of this essay, but 2 recovered. In 15 cases Mr. Paget saw, but 1 got well; and in a grand total of 45 cases we can find but 5 recoveries. Furthermore, we have shown that this enormous fatality is mainly due to the fact that facial anthrax excites thrombosis and secondary phlebitis in the veins connected therewith, which are rapidly propagated into the ophthalmic vein and cavernous sinus, etc., on the one hand, and into the external jugular vein, etc., on the other. Now, why does it happen that facial anthrax is so much more liable to produce thrombosis and phlebitis than any other suppurative inflammation with which we are acquainted?

Prof. Güntner holds that the short stiff connective tissue of the lips, nose, septum narium, etc., specially favours the occurrence of thrombosis in the veins belonging to these parts. This explanation, however, does not appear to me satisfactory, since suppurating wounds and ulcers of the lips and face in general, are not particularly liable, nor even apt, to be followed by thrombosis, phlebitis, and pyæmia, or either of them, which could hardly obtain if the connective tissue of these parts exerted so baleful an influence upon the veins. The truth is, this form of facial inflammation is entirely unlike any other disease known in this country. It has been called "malignant pustule," but improperly so, because it runs its course entirely without the history of contagion which belongs to that disorder. It has also been called, and with less impropriety we think, "malignant carbuncle" of the face. No doubt its peculiar malignancy is due to some

special condition of the anthrax itself, to some peculiarly acrid sanies of a septic origin and character which is developed in the foci of suppuration. We must suppose that a peculiarly intense poison is formed in these carbuncles, under circumstances that we do not exactly understand, which, on entering the veins by absorption, causes the blood in them to coagulate and to undergo putrefactive changes with great rapidity, and their walls to become destructively inflamed, in order to explain the phenomena of this disease. Moreover, this conclusion affords an important indication for the treatment of this disease.

But it may be asked whether in these rapidly fatal cases of facial anthrax the inflammation of the vein-walls does not precede the formation of coagulum in the vein-calibres—whether the phlebitis does not precede and induce the thrombosis. We reply that, on autopsy of cases belonging to this category, the vein-walls are usually found to be not at all, or but slightly, inflamed in parts where the thrombus is newest, while they are considerably inflamed only in parts where the coagulum is of a considerably older date—a circumstance which would not obtain if the thrombosis followed and depended upon the phlebitis for its production. We may, however, with propriety here remark, that a slight glance at the history of the formation of coagula in the veins during life shows that it is intimately connected with the history of phlebitis, and that widely different views concerning their origin and relationship have prevailed at different times. At first the clots were regarded as inflammatory exudations which were thrown out upon the inner surface of inflamed veins (*Hunter*). Afterwards it was ascertained that the clots were genuine coagula that had been formed from the blood itself, and then the opinion that the blood coagulated in these cases as an immediate consequence of the phlebitis, which was supported by the authority of Cruveilhier, generally prevailed. But it was reserved for Virchow, in his classical work on thrombosis, to clear up the matter and to show that, in a large majority of instances, the coagulation of blood in the veins precedes the inflammation of their walls, and that primary phlebitis with subsequent thrombosis much more rarely occurs.

3. *Causes of the Marasmic Variety of Cerebro-venous Thrombosis.*—There are four parts of the venous system in which the blood is especially liable to coagulate in consequence of debilitating influences and marasmus, during life, namely, the right chambers of the heart, the veins of the lower extremity, the veins of the true pelvis, and the sinuses of the dura mater; and of the last-mentioned, more particularly the superior longitudinal and lateral sinuses. The circumstances which specially favour the formation of coagula in these sinuses, in marasmic subjects, are the dilations of calibre, the triangular shape, and the transverse bands (*chordæ Willisii*) projecting inwards from the walls, whereby the blood-stream is retarded, and more or less of blood-stasis (stagnation) is produced. Be-

sides, the cerebral veins, for the most part, empty into the superior longitudinal sinus in such a manner that the streams coming from them flow in directions which are either at right angles with the course of the blood in the sinus, or even oblique from behind forwards, that is, in directions more or less considerably opposed to the natural course of the blood in the sinus; and this circumstance favours the retardation of the blood-stream, not only in the sinus, but likewise in the cerebral veins themselves. Thus, we perceive that even under normal conditions the blood-current in the cerebral sinuses is comparatively slow, especially in the superior longitudinal, and the veins connected therewith; and when certain pathological conditions supervene which tend to more or less considerably diminish the force and rapidity of the general circulation, the retardation of the blood-flow, or the approach to blood-stasis, in the cerebral veins and sinuses is proportionally augmented, and a state of things correspondingly favourable to the formation of thrombus is produced. Also, we should, in this connection, again call attention to a circumstance of considerable importance which Henle was the first to point out, namely, that when the blood stagnates in the capillaries from diminished *vis à tergo*, as may readily happen in advanced cases of marasmus and debility, the blood may also lose its motion in the veins which spring from these capillaries, and thus thrombosis of these veins may result from stagnation in the capillaries, especially if, at the same time, the blood itself should be unusually disposed or inclined to coagulate.

But a perusal of the cases related above shows that other causes besides retardation of the blood-flow are concerned in the production of marasmic thrombosis of the cerebral veins and sinuses of the dura mater. And, first of all, the blood itself must be in a condition to readily coagulate, that is, it must be more coagulable than natural, or in a morbid state, whereby its coagulability is at least considerably increased. In perusing the marasmic cases of cerebro-venous thrombosis quoted above from the reports of Gerhardt, Von Dusch, West, Bouchut, Fritz, Crisp, Andrew, Murchison, Forster, Ogle, Janeway, and Charcot, I have been particularly struck by one circumstance, namely, in almost every instance the subject was obviously labouring under some blood-disorder of importance when the thrombosis occurred, and had been so affected, in most instances, for some time prior to its occurrence.

Moreover, on scrutinizing these cases we find that, although the nature of the blood-disorder differed considerably in different instances, yet all of them agreed in one particular, to wit, in exhibiting an abnormal tendency on the part of the blood to coagulate. For example, in Dr. Gerhardt's cases of diarrhoea and cholera infantum, the coagulability of the blood in the vessels became increased because its volume was rapidly diminished, and substance inspissated in consequence of the withdrawal therefrom of a great quantity of watery liquid to support the abdominal discharges. In

some cases mentioned by Von Dusch, the coagulability of the blood also became increased because its volume was suddenly diminished by excessive bloodletting, and in a somewhat analogous case related by Mr. Forster the coagulability of the blood was increased, in part, by a succession of hemorrhages to which the sloughing of a fungous tumour of the dura mater subjected the patient; in another set of these cases the increased coagulability of the blood was due to *hyperinosis*, which resulted from pneumonia in Dr. Ogle's case (No. LXVII.), from typhoid fever and pleuro-pneumonia in a case mentioned by Von Dusch, and from the puerperal state in a case also mentioned by Von Dusch; finally, in the cases of marasmus, anæmia, and debility, the result of various wasting diseases of a chronic character, such as abscess, vertebral caries, scrofulosis, lung-phthisis, chlorosis, syphilitic cachexia, albuminuria, ague cachexia, chronic pleurisy, etc., that are related by Fritz, Von Dusch, West, Bouchut, Andrew, Murchison, Ogle, Janeway, etc., the increase of coagulability of the blood was probably due to the increase of its white corpuscular element, or the state of leuco-cythæmia which usually attends these disorders.

This abnormal tendency on the part of the blood to coagulate is doubtless one of the most important of the agencies which are concerned in producing the marasmic variety of cerebro-venous thrombosis. There is, however, another cause which is almost always concerned in producing this disorder, that possesses nearly equal importance. It is the enfeebled action of the heart, or the diminished force of the circulation which is usually present in the cases belonging to this category as an immediate consequence of the anæmia, debility, and marasmus. There results from this weakening of the cardiac contractions a corresponding tendency on the part of the blood to stagnate in the capillaries and to cease to move in the veins beyond them from want of the *vis à tergo*. This point in the etiology of this affection is also important because the vigour of the heart's contractions can be increased by remedies.

Another cause which probably exerts some influence, in occasional instances, in producing the marasmic variety of cerebro-venous thrombosis, is vaso-motor paralysis of the cerebral bloodvessels, which, by destroying the contractility of these vessels, would allow them to become expanded by the force of the blood-stream, and would favour in a corresponding degree the occurrence of stasis and coagulation, especially in the capillaries and veins.

Again, age exerts an important influence in producing the marasmic variety of this affection. Its victims are mostly found among the very young and the aged. Infants and young children are especially liable to be attacked by it because they are exposed to the occurrence, not only of the diseases which produce it in the more advanced periods of life, but also of special diseases, such as the colliquative diarrhœa and cholera infantum, which, as we have shown above, may rapidly increase the coagu-

lability of the circulating blood by diminishing its volume or inspissating it, on the one hand, and, at the same time, may induce it to stagnate in favourable localities by weakening the cardiac contractions and diminishing the vascular tension, on the other. Furthermore, during infancy and childhood the brain constitutes a much larger proportional part of the whole body, amounting then to one-tenth or one-fifteenth thereof, than it does in adult years, when it becomes reduced (comparatively) to one-fortieth or one-fiftieth part of the whole body. Besides, the watery brains of infants are especially prone to shrink and thus cause the cerebral veins and sinuses to expand their calibres in order to fill up the resulting vacuum, on the occurrence of any disease which rapidly withdraws the serum from the blood and compels it in turn to withdraw the serum from the substance of the brain, as well as from the parenchyma of other organs, by the process of absorption. Aged people, also, are especially liable to be attacked by cerebro-venous thrombosis, because the coagulability of their blood is prone to become increased from senile marasmus, while the cardiac contractions grow weaker from the decay incident to advancing years, and the cerebral veins and sinuses become expanded and the blood-stream sluggish in them in consequence of the shrinkage to which their brains are exposed from senile atrophy. Moreover, in aged people the force of the blood-stream is apt to be weakened in the capillaries, veins, and sinuses of the brain, by the occurrence of atheroma and fatty degeneration in the coats of the cerebral arteries, which renders them more or less stiff, non-elastic, and non-contractile, and thus still further lessens the *vis à tergo* of the senile heart. But, although marasmic thrombosis of the cerebral veins and sinuses of the dura mater is most frequently met with in aged persons and young children, it may also occur at any other period of life when some disease is present which induces a cachectic state of the system with feeble heart-action, and, at the same time, increases the coagulability of the blood.

Furthermore, we should remark that the causation of cerebro-venous thrombosis is usually a very complex affair, and that not a solitary one but several of the factors above mentioned are jointly concerned in the production of almost every individual case. We should also state in this place that we have discussed the etiology of this deadly disease as thoroughly as we could, with a hope that we might discover in this way what the causal indications are for its treatment, and thus acquire some means to prevent its occurrence and to obviate its mortality. These indications, however, will be taken up and duly considered in the appropriate place, that is, under the head of treatment.

Anatomical Appearances or Changes.—On examining post-mortem the veins and sinuses affected with thrombosis they usually present externally a more or less swollen or distended appearance, and are more or less stained with a reddish or a brownish hue. On opening them the distension

is found to be due to the thrombus which fills up the calibre and dyes the walls with its colouring-matter. The thrombus itself, if recent, is usually dark-red or brown in colour, pretty firm in consistence, rather dry, somewhat elastic, laminated, and more or less strongly attached to the vessel which contains it. As it grows older, however, the red corpuscles gradually disappear, and at the end of ten days or a fortnight it may be so completely decolourized as to resemble a plug of pure fibrin. But in the cases of inflammatory origin it almost always undergoes softening or disintegration, and sometimes putrefaction. In such cases, also, the walls of the affected veins and sinuses are exceedingly apt to be inflamed. When the thrombus softens the disintegrating process usually commences at its centre, and the liquefied material varies in colour and consistence from that of wine-lees to that of cream-like pus. More frequently, however, it has a dirty reddish-brown appearance, and the consistence of purulent matter. Examined with the microscope the disintegrating thrombus, even when puriform in appearance, is found to consist of granular fibrin, oil-drops, some red corpuscles more or less altered or broken down, and many leucocytes. When the walls of the affected veins and sinuses are inflamed they become thickened and more or less softened, their capillary vessels injected, their inner surface tomentose, roughened, and sometimes eroded or ulcerated, as well as dark-red in colour. When erosions or ulcerations are present, genuine purulent matter can also be found intermingled with the disintegrating thrombus. Furthermore, the veins which lie on the distal side of the thrombosed sinus are generally gorged with blood, the pia mater and cerebral substance cedematous, with more or less serous effusion in the ventricles, and in many instances blood also is extravasated into the meninges or into the cerebral substance.

In *nineteen* of the cases related or referred to above, cerebral or meningo-cerebral hemorrhage occurred. This complication, however, is met with very much oftener in the marasmic than any other variety. Of these nineteen hemorrhagic cases sixteen had a marasmic origin, and an examination of them shows that cerebral hemorrhage is most liable to occur in cases where the superior longitudinal or straight sinuses, or the cerebral veins themselves, are thrombosed. But secondary phlebitis is met with very much oftener in cases having an inflammatory than in those having a marasmic origin. Besides, in these cases the inflammatory process is exceedingly apt to spread from the sinus-walls to the contiguous membranes of the brain, thereby inducing a meningitis which is often purulent in character; and sometimes the inflammatory process spreads also to the brain-substance and induces inflammatory softening and abscess therein. Finally, the cases having an inflammatory origin are frequently, and the marasmic cases occasionally, complicated with the occurrence of hemorrhagic infarctions in the lungs, of so-called metastatic pneumonia and

pleurisy, of so-called secondary abscesses in the lungs, liver, etc., and with the phenomena of pyæmia or septicæmia.

Symptoms and Course.—Different observers give somewhat different views of the phenomena produced by thrombosis of the cerebral veins and sinuses of the dura mater. We shall, however, present only a brief sketch of the symptoms which the leading varieties of this disease present, and illustrate it with condensed reports of some additional cases. Dr. Hubner (*Archives der Heilkunde*, ix. 5, p. 417, 1868) gives the following instance of marasmic thrombosis of the cerebral sinuses, wherein, as usually obtains, the diagnosis was not made during life, together with a critical analysis and interpretation of the symptoms:—

CASE LXX.—The patient presented at first general head-symptoms, but soon afterwards neuralgia of the right supra-orbital nerve, blepharoptosis on the same side, œdema of the corresponding eyelids, loss of hearing, and finally facial paralysis on the right side with blood-stases in the corresponding frontal veins. These phenomena were all very transient. On *autopsy* there were found thrombosis of the superior longitudinal and transverse sinuses, thrombosis of the right cavernous sinus, and thrombosis of the right ophthalmic vein.

Dr. Hubner thinks the formation of the thrombus in this case commenced in the superior longitudinal sinus and extended therefrom into the transverse sinuses; the obstruction of these vessels with coagulum brought on an intense collateral stasis of blood in all the sinuses at the base of the brain. The stasis thus produced in the cavernous sinus led to dilatation of the collateral veins of the face, and to compression of certain nerves, including the great sympathetic; hence to dilatation of the cerebral arteries. When the thrombosis had extended as far as the cavernous sinus, the phenomena of stasis and compression diminished in intensity. It is easy in this way to explain the mutability of the symptoms, which was indicated by Lebert as one of the characteristic phenomena of thrombosis involving the cerebral sinuses.

Dr. Hubner remarks concerning the phenomena which result from thrombosis of the cerebral sinuses: The stasis in the cerebral veins generally gives rise to characteristic cerebral symptoms. Venous dilatation may also exist in the collateral vessels of the walls of the cranium, or rather it may show itself in the veins which unite the vessels of the face to those of the cranium. In the latter case vascular dilatation has considerable diagnostic importance. In obstructions of the transverse sinuses one may observe dilatation of the emissary veins of Santorini and of the mastoid vein. The parietal veins also are dilated in cases where the longitudinal or ethmoidal sinuses are obstructed. When the ophthalmic vein which carries to the cavernous sinus the blood of the frontal vein, of the ophthalmic bulb, of the eyelids, and of the ocular muscles, is obstructed with thrombus, one may observe a venous injection in the skin of the forehead, with œdema of the eyelids, of the globe of the eye, and even of the ocular muscles; hence doubtless arises the prominence of the eye often noticed in cases of this kind (*Archiv. Gén. de Méd.*, 1869, vol. i. pp. 357–359).

Dr. Hermann Weber (*Medico-Chirug. Transact.*, vol. xliii. pp. 177-180) relates the following case in which erysipelas of right side of face, etc., was followed by thrombosis of right ophthalmic vein and of right cavernous and circular sinuses, meningitis, and death. The account of the symptoms and *post-mortem* appearances, although much abridged, is very interesting and useful in this connection :—

CASE LXXI.—F. M., aged 25, a pale and delicate-looking shoemaker, was attacked by erysipelas of right cheek and right eye on December 14th. At the end of a week the erysipelas had almost disappeared, and the patient was considered convalescent, when, on December 23d, he began to complain of dull headache; pulse 105; body temperature increased. During the next three days the headache increased, there was occasional delirium, grinding of teeth in sleep, twitching of muscles; pupils rather contracted, almost immovable; sickness and constipation with a pulse slow and irregular (60-85). On December 27th, he became drowsy; pupils wide and sluggish; left arm slightly paralyzed. On December 30th, drowsiness much increased; pupils dilated and insensible; paralysis of left side extending now to leg as well as arm. The degree of this paralysis varied at different times, but a remarkable, although transient improvement of this symptom and all the others occurred on December 31st, when the drowsiness almost disappeared, the patient became conscious, and was able to speak to his friends; in the following night, however, the coma returned, the pulse became very weak and frequent, the breathing irregular, until death ensued on January 2d.

Autopsy 26 hours after death.—Upper part of nose, lids of right eye, and surrounding tissue slightly swollen; a moist light-brown scab from an almost dried blister is seen on right side of nose; a similar scab on upper lid of right eye, slight oedema of pia mater on both sides; purulent meningitis on lower surface of anterior lobe of right hemisphere; lateral ventricles contain about two ounces of turbid fluid; their walls slightly softened, but the rest of the brain-substance normal. The right cavernous sinus feels hard and enlarged; its walls are thickened and its calibre filled by a grayish-red coagulum strongly adherent to the lining membrane, which appears not quite smooth. The clot is composed of several layers; the exterior being grayish-red, the middle purer red, the centre cherry-red, and softer than the others. The internal carotid and the nerves in the walls of the sinus appear unchanged. The ophthalmic vein, in connection with the sinus, contained a dark coagulum, rather firmly adherent to the thickened lining membrane, but the rest of this vein, as well as the veins of the face, etc., were not examined, because it was not permitted to open the orbit and the tissues of the cheek. Blood in circular sinus coagulated; that in left cavernous sinus not quite coagulated; their walls normal; the other sinuses exhibited nothing pathological. Heart hypertrophied; lungs and abdominal organs normal; no secondary abscesses.

The brain-symptoms in the above case resemble in many respects those caused by acute hydrocephalus, which was, in fact, diagnosed by two physicians who examined the patient without being acquainted with his history. The changing character of the hemiplegia was remarkable, and not less so the striking improvement of all the symptoms two days before death; but the latter phenomenon has occasionally been seen to occur in the most deceptive manner in other diseases of the brain (*Weber*).

The fact that the appearance of head-symptoms was preceded by erysipelas of the face, especially of the right eyelids and side of the nose, that the right ophthalmic vein and right cavernous sinus were distended with thrombus and their walls inflamed, and that there was circumscribed purulent meningitis confined to the under surface of the anterior lobe of the

right cerebral hemisphere, renders it pretty certain that the endocranial affection was caused by the facial erysipelas, and that the ophthalmic vein was the medium of communication. It is not improbable that the coagulation of the blood commenced in the capillaries and venous plexus of the right side of nose, cheek, and eyelids, and proceeded thence to the right ophthalmic vein and cavernous sinus, as it did in Cases L. and LL, related in a previous paper, which are strictly analogous to the above.

The inflammatory thickening that was found in the coats of the ophthalmic vein and cavernous sinus might lead to the view that phlebitis (properly so called) was the first link in the chain of pathological processes, and that the coagulation of the blood and the alteration of the clot in these vessels were only the consequences of inflammation of their walls. As we know, however, that the presence of blood-clot in veins, and the changes in composition which it is very liable to undergo, are in themselves sufficient to cause inflammation of the vein-walls, on the one hand, and that inflammation of the vein-walls alone is not sufficient to cause thrombosis on the other, the inflammatory thickening above mentioned cannot be considered to possess any value as evidence that the erysipelatous process was propagated from the face to the membranes of the brain by idiopathic phlebitis, instead of thrombosis and secondary phlebitis.

Dr. Hermann Weber (*Medico-Chirurg. Transact.*, vol. xliii. pp. 182-186) has also reported the following case of cerebro-venous thrombosis resulting from syphilitic ozæna, in which the symptoms of thrombosis were complicated with those of pyæmia. The following brief account of it will likewise prove useful in this connection :—

CASE LXXII.—A waiter, aged 24, of scrofulous parentage, had been afflicted with constitutional syphilis for about six years, and with syphilitic ozæna for over one year.

February 4. He has headache, especially in frontal region; rather increased by shaking the head; not increased by tapping on the forehead. Nose flattened and slightly swollen; nostrils blocked up by dry brownish crusts; fetor moderate; pressure on nose not painful; pupils symmetrical and responding well to light; pulse regular, about ninety; bowels costive.

7th. Appearances of nose unchanged; headache constant, but increased at night; yesterday he was often delirious; to-day he is drowsy, but can be roused, and then answers reasonably; pupils rather dilated and sluggish. Has had repeated rigors. Spleen yesterday found perceptibly enlarged; to-day there is in addition, tenderness of lower part of left side, and a soft friction-sound is occasionally heard.

9th. Somnolency increased; carphology; muttering delirium; muscular twitching, especially in thighs; ptosis of left upper eyelid; motions of left eye much restricted from paralysis of external rectus; pupils (both) wide and sluggish; tongue dry; pulse 120-125, very small; friction-sound over lower part of left chest again noticed; dulness increased.

10th. Complete coma; right-sided hemiplegia; left eye almost closed; its conjunctiva slightly injected. Death on the 11th.

Autopsy 22 hours after death.—Examination of eye-socket not allowed. Circumscribed purulent meningitis limited to the inferior surface of anterior lobe of left cerebral hemisphere; veins of pia mater distended and filled with dark coagula. Lateral ventricles contain about three drachms of not quite transparent fluid.

Superior longitudinal sinus contains a dark-red coagulum, rather firmly adherent to its walls, which, however, are not perceptibly altered. Left cavernous sinus filled by a crumbling slightly cohesive thrombus of reddish-gray colour. The external part thereof adheres closely to the walls. The central part is softened to the consistence of thick pus, and has a brownish-red colour. The walls of this sinus are considerably thickened, as are also those of the ophthalmic vein (as far as examined) which is likewise filled by a dry, rather dark coagulum. The internal carotid artery and the nerves in relation with the left cavernous sinus appear not materially changed, excepting increased thickness of the surrounding areolar tissue. The left inferior petrosal, the circular, and the right cavernous sinuses contain a dark-red coagulum, which adheres but slightly to the unchanged lining membrane. The other sinuses of the dura mater contain a loose coagulum which does not adhere at all. Cranial bones not carious.

The softened part of the thrombus of left cavernous sinus, examined with the microscope, contains: 1st. Small granules, which are dissolved by acetic acid; 2d. Aggregations of such granules into irregular-shaped bodies (round, oval, crescentic), which are likewise dissolved by acetic acid, nowhere exhibiting the characters of pus globules; 3d. Other granules and aggregations of granules, dissolvable by ether and not by acetic acid; 4th. Oil-globules of various size; 5th. Blood-globules of different shapes, some being much shrunk, some exhibiting a tendency to the star form, others being granular on the surface.

A pint of purulent effusion in left pleural cavity; secondary abscesses in lungs and liver. Spleen enlarged and much softened.

The dropping of the upper lid of left eye, as well as the paralysis of the left external rectus, in this case, are easily accounted for by considering the relation which existed between the third and sixth nerves and the thrombosed cavernous sinus, together with the thickened state of the surrounding connective tissue, since these nerves may have been compressed thereby.

The symptoms referable to the cerebro-venous thrombosis were frontal headache, delirium, stupor, dilatation of pupils, swelling of left eyelids, injection of conjunctiva, ptosis of left upper eyelid, paralysis of left external rectus oculi, right-sided hemiplegia, and coma. The symptoms referable to pyæmia were rigors occurring at irregular intervals, marked increase of body-heat, enlargement of spleen, soft friction sound and dulness over lower part of left chest, muttering carphology and other muscular twitchings, dryness of tongue, and great frequency of pulse. With regard to the diagnosis, an attentive consideration of the history of the patient, and of his symptoms as a whole, employing at the same time the process of exclusion in their interpretation, could hardly fail to lead any one familiar with the subject of thrombosis of the cerebral sinuses, together with the symptoms of pulmonary infarction and pyæmia, to a correct understanding of the case.

The thrombosis probably commenced in the veins directly connected with the nasal ulceration, and proceeded thence by prolongation through the anastomosing branches of the facial vein into the left ophthalmic, and the left cavernous sinus. The thickening of the walls of these vessels was the result of inflammatory action excited therein by the presence of a disintegrating thrombus; and the purulent meningitis in turn was due to the

extension of the inflammatory process from the walls of the ophthalmic vein and cavernous sinus to the neighbouring membranes of the brain. The thrombosis of certain veins of the pia mater, which was found on autopsy, resulted in all probability from the purulent meningitis, and the formation of thrombus in the superior longitudinal sinus was occasioned by the extension of the thrombi from the cerebral veins to the calibre of the sinus.

But a review of the various cases of thrombosis of the cerebral veins and sinuses of the dura mater, heretofore presented, conclusively shows that the symptoms attending this affection when produced by inflammatory causes differ considerably from those which are present when it results from debilitating or marasmic influences. Without descending too much into particulars we may remark that in the cases of inflammatory origin we are much more apt to find phlebitis of the sinuses together with an inflammation of the membranes of the brain which has been lighted up by an extension of the inflammatory process from the sinus-walls to the contiguous membranes of the brain, on the one hand, as well as the phenomena of pulmonary infarction and septicæmia, on the other, than in the cases having a marasmic origin. In fact, the marasmic variety of cerebro-venous thrombosis is but seldom attended with secondary phlebitis, septicæmia, and the so-called metastatic pneumonia, while the inflammatory variety is often attended with these consequences. In the marasmic cases, then, we but seldom or never find the symptoms complicated with, or masked by, the phenomena of secondary meningitis, of septicæmia, or metastatic pneumonia.

What are the consequences, so far as the brain is concerned, of plugging up the cerebral veins and sinuses of the dura mater with coagulum? They are the following: venous congestion, œdematous infiltration of the pia mater, and of the brain-substances itself, together with cerebral hemorrhage in a large proportion of the cases. In other words, the substance of the brain becomes compressed by the engorged veins, the exuded serum, and the extravasated blood; or, speaking more correctly, the cerebral capillaries become compressed in this way, and the nerve-filaments and ganglion-cells of the cerebral substance deprived of nutrient blood. The symptoms resulting from thrombosis of the cerebral sinuses are, therefore, the symptoms of cerebral anæmia, namely, sopor with or without convulsions, pain, paralysis, coma, death. It will be observed that the symptoms are much the same as when the anæmia of the brain-substance is produced by some other cause.

The question then arises whether it is possible to make a differential diagnosis between cerebral anæmia due to thrombosis of the cerebral sinuses and that due to other causes. Von Dusch thinks that when infants are the subjects such a diagnosis can sometimes be made. He points out that in such cases as those related by Dr. Gerhard the symptoms taken to-

gether indicate with tolerable certainty the presence of cerebro-venous thrombosis. When profuse diarrhœas in weakly children are followed by the above-mentioned cerebral symptoms, with depression of the fontanelles and overlapping of the cranial bones, accompanied by an unequal distension of the two external jugular veins, the diagnosis of cerebro-venous thrombosis is highly probable, the disease being located on the side where the vein is least distended; but the absence of the last-named phenomenon does not exclude the possibility of thrombosis of the cerebral sinuses, because if the superior longitudinal sinus alone, or both lateral sinuses simultaneously, happen to be the seat of the disease, no inequality with respect to distension can be observed in the two external jugular veins. In most of the marasmic cases, however, the diagnosis is very uncertain and can only be based on a general consideration of all the symptoms, or be arrived at by the exclusion of other affections.

In the cases which have an inflammatory origin the symptoms that present themselves are usually due not so much to cerebral anæmia as to certain morbid changes in the membranes and substance of the brain, and to septicæmia with pulmonary infarctions or so-called metastatic pneumonia. When, however, in cases of chronic otitis, or facial furuncle, or facial erysipelas the above-mentioned symptoms of cerebral anæmia supervene, and cannot otherwise be accounted for, they should lead us to strongly suspect that thrombosis has occurred in the sinus of the dura mater which lies next to the inflamed part; and in cases of facial anthrax and of facial erysipelas this diagnosis will be still more probable if there are also œdematous tumefaction with incomplete closure of the eyelids and protrusion of the eyeball on the affected side of the head.¹

The mutability or transient character of the symptoms which obtains in many cases belonging to each variety of this affection is probably due to the fact that the degree of cerebral anæmia is not constant but varies according to the growth of the thrombi themselves, as well as in accordance with the freedom with which the blood escapes from the brain through the collateral channels.

Ophthalmoscopic Symptoms of Cerebro-venous Thrombosis.—But few observations on this point have been placed on record. Dr. Bouchut, however, (*L'Union Médicale*, 1869) concludes, from his own experience with the ophthalmoscope in cases of cerebral disease, which appears to have been extensive, that hyperæmia of the retinal veins, when attended with stasis and the formation of coagulum, denotes repletion of the sinuses and thrombosis of the meningeal veins; that œdema of the papilla indicates thrombosis of the sinuses or of the cerebral veins; and generally

¹ In facial anthrax such symptoms as the following, namely, headache, delirium, stupor, dilatation of the pupil, difficulty in swallowing, incontinence of urine, and coma, pretty uniformly occur.

that in cases where the cerebral circulation is greatly disturbed (as it is in cerebro-venous thrombosis) one may see something analogous in the eye (*Brit. and For. Med. Chirurg. Review*, Oct. 1871, pp. 511, 512). Should these opinions be confirmed by other observers, they will furnish diagnostic signs of great importance.

Treatment.—In this disease art is powerless to dissolve the thrombus or to reopen in any other way the obstructed veins and sinuses of the brain, after the coagulum is formed. In treating this affection, therefore, the physician should mainly direct his attention to the prophylaxis; that is, while treating the various accidents and disorders which, as shown above, are liable to prove fatal by inducing cerebro-venous thrombosis, he should endeavour to prevent the formation of the thrombus itself, and in doing this he must be guided by the causal indications. We will briefly present them for each variety of the disease.

1. With regard to the traumatic variety: the indications for treatment which are derived from a consideration of the etiology of this variety are few and simple. They consist in the removal by surgical means of any foreign bodies which penetrate the sinuses so as to come directly into contact with the blood contained in them, or press upon them externally, so as to narrow their calibre, or obstruct the movement of the blood through them in any other way. They consist also in rendering nugatory the operation of any cause which by increasing the coagulability of the blood promotes the formation of thrombus at the seat of injury, in avoiding excessive blood-letting, in arresting excessive hemorrhages, and in restraining excessive alvine discharges in cases of cranial injury.

2. With regard to the inflammatory variety: inasmuch as the occurrence of thrombosis and phlebitis in the cases belonging to this variety is due to the presence of some deleterious agent of peculiar character, some special ichor, in the inflamed part or suppurating focus, as we have shown above, which by virtue of its own destructive properties causes the blood to coagulate in the veins proceeding from the inflamed part, and in the corresponding sinus of the dura mater, which likewise causes the thrombus itself to disintegrate, and sometimes to putrefy, and the walls of the affected vessels to become inflamed, the causal indications for the treatment of these cases are also very plain. They consist in preventing the development of this poison in the inflamed or suppurating part on the one hand, and in reducing it to a state of inertness, that is, in destroying it, on the other.

Experience has shown that internal otitis, facial anthrax, facial erysipelas, and eczema, but especially the first two, are the inflammatory disorders which are most liable to be attended with thrombosis of the cerebral sinuses. In cases of suppurative otitis we can do much to ward off thrombosis by securing a free outlet for the matter, by extracting the fragments of dead bone as soon as they become detached, and by the persistent use of antiseptic or disinfectant washes, such as chlorine water, liquor sodii chlorinat. suitably

diluted, weak solutions of carbolic acid, pretty strong solutions of sulphite of soda, etc., and the "girondin" disinfectant fluid. An aural surgeon of eminence informs me that the last-named has yielded very satisfactory results in his hands. By employing these means we may keep the purulent matter in the internal ear and neighbouring parts from putrefying, and the ichor above mentioned from forming, or we may destroy it if already formed.

Generally, while treating the local inflammatory affections of the head we can best diminish the risk of cerebro-venous thrombosis by the early evacuation of all purulent collections with free incisions, by cleanliness, and by the unstinted use of antiseptic fomentations and lotions, combined with appropriate internal medication. But when carbunculoid or furunculoid inflammation (anthrax) of the face presents itself, something more is required in order to prevent the development of thrombosis, phlebitis, and septicæmia. The terrible mortality recorded against it above (40 deaths in 45 cases) shows the insufficiency of the plans of treatment heretofore employed. The medication must be more radical and thorough in order to prove successful. The pimple, boil, or pustule which ushers in the disease, that is, the inflammatory focus, wherein the special septic poison which induces the thrombosis, etc., is formed, must be destroyed with an unsparing hand, at an early stage, if we would save the patient. The plan of treatment which has proved so successful in a strictly analogous disease, the malignant pustule of Europe, should be tried in this affection also. Dr. Belles (*Gaz. Méd. de Paris*), a physician practising in the districts of Béja and Faro, in Portugal, where malignant pustule is very frequent in consequence of the number of cattle raised there, says he has treated hundreds of cases of this disease without having noted a single death. The treatment employed by Dr. Belles consists in crucial incision of the boil throughout its whole extent, in depth as well as breadth, and cauterization with chloride of antimony, repeated until bleeding ceases. The gangrenous tissue is completely insensible to both cutting and cauterization (*Med. Record*, Aug. 1873, p. 372). The separation of the eschar should be favoured by the application of antiseptic poultices made of charcoal, yeast, bark, etc., or, better still, by antiseptic fomentations, consisting of carbolic acid (part 1 to 200), or liquor sodii chlorinat. (part 1 to 12), or zinci chlorid. (part 1 to 200), or of the "girondin" disinfectant fluid. Prof. Güntner, of Salzburg, who saved two out of five cases of facial anthrax, recommends especially the constant application of warm fomentations. He found that cold applications were positively hurtful. Mr. Thomas Smith (*Clin. Soc. Transact.*, iii. p. 63) also proposes that the sulphite of soda or magnesia should be systematically administered from the very first in facial anthrax as a preventive of blood-poisoning. At the same time, if the body-temperature ranges high, it may be advantageously abated by giving quinine in full doses, or in such doses as to produce cinchonism.

3. With regard to the marasmic variety: in the cases belonging to this

sort of cerebro-venous thrombosis, also, the causal indications for treatment are but few and plain. In managing the various forms of chronic disease which are attended with marasmus, leucoeythæmia, and great debility, and which, as we have shown above, are also liable to result in thrombosis of the cerebral veins and sinuses of the dura mater, the indications are first to lessen the abnormal tendency on the part of the blood itself to coagulate, and second, to prevent the occurrence of blood-stasis in the venous system by supporting the failing powers of the heart and arteries. And here we should remark, that the physician's success in saving or prolonging life in cases of pulmonary tuberculosis, chronic bronchitis, chronic pneumonia, chronic pleurisy, chronic abscess, vertebral caries, chlorosis, leukæmia, scrofulous adenitis, ague cachexia, syphilitic cachexia, infantile marasmus, senile marasmus, and many other debilitating diseases, will largely depend upon his ability to prevent the occurrence of thrombosis in some part of the venous system. Moreover, it is a fortunate circumstance that the remedies which are best adapted to fulfil the above-mentioned indications are, for the most part, also the medicines which experience has shown to be most useful, in a general way, in combating these several diseases. These remedies are the various preparations of ammonia, especially the muriate and carbonate, alcoholic stimulants, quinine, and such cardiac excitants as digitalis and atropia.

After much observation and reflection, I have no doubt that certain preparations of ammonia, especially the muriate, carbonate, aromatic spirit, and the liquor ammonii anisatus of the Prussian codex, are capable of diminishing considerably the coagulability of the blood when it is morbidly augmented, and that too, without inducing debility even when their use is long continued. For this and other reasons I hold the muriate of ammonia to be one of the most valuable medicines with which I am acquainted. It is probable that the spt. ammon. aromat. and the liquor ammon. anisat. prove so useful in the bowel complaints of children, when great debility is present, not only because they strengthen the cardiac contractions, but also because they diminish the coagulability of the blood itself. It is doubtless for a similar reason, that the administration of carbonate of ammonia proves so serviceable in scarlatina, that it is held by many to be almost a specific for that disease. Finally, it was the aromatic spt. of ammonia taken steadily for many months which saved the patient in the only case of leukæmia that I have found recorded where recovery took place.

ART. VI.—*On the Value of High Powers in the Diagnosis of Blood Stains.*

By JOSEPH G. RICHARDSON, M.D., Lecturer on Pathological Anatomy in the University of Pennsylvania, and Microscopist to the Pennsylvania Hospital. (Read before the Biological and Microscopical Section of the Academy of Natural Sciences, and recommended for publication in the American Journal of the Medical Sciences.)

IN the pages of this Journal for July, 1869, appeared an article on the detection, by the microscope, of red and white corpuscles in blood stains, in which I advocated the employment of high powers in such examination, and asserted that by their aid I had been able to demonstrate that the residuum of a dried blood-clot, left after the action of pure water, so long mistaken by Virchow, Robin, and their followers, for "pure fibrin," was composed chiefly of the *cell walls* of the red blood corpuscles, and that by proper management these *capsules* of the red disks could be brought clearly enough into view to enable me to measure them accurately, and so distinguish the dried blood of man from that of an ox, pig, or sheep, with a certainty disputed by Caspar, Wyman, Fleming, and other previous observers.

This possibility of recognizing blood globules when dried *en masse*, is of course closely associated with, if not actually dependent upon, their possession of a cell wall, as maintained in my paper on the cellular structure of the red blood corpuscle, in the *Trans. of the Am. Med. Assoc.* for 1870 (the theory being mainly deduced from experiments upon the gigantic blood disks of the Menobranchus, in which crystals of hæmato-crystallin were seen to prop out a visible membranous capsule). Indeed, as I have elsewhere remarked, if the red blood globules are simply homogeneous lumps of jelly-like matter, the chance of discovering any individual corpuscles in a mass of dry blood clot, however moistened, seems almost as hopeless as the search after individual rain drops in a cake of melting ice.

Notwithstanding this, however, we find, in the third edition of Prof. A. S. Taylor's work on Medical Jurisprudence (vol. i. page 548), figures of red blood corpuscles of ten different animals, as they appear under a low power, with the statement (strictly accurate in regard to blood disks thus *feebly* magnified), that "there are no certain methods of distinguishing, microscopically or chemically, the blood of a human being from that of an animal, when it has been once dried on an article of clothing." This declaration seems to show that more complete and conclusive proof is still needed of the superior advantage derivable from the application of high objectives to the diagnosis of blood stains.

The *à priori* arguments against the value of this microscopic test for distinguishing human blood from that of the ox, pig, horse, sheep, and goat, may be grouped under three heads, viz.: 1st. It is objected, as by

Taylor, Caspar, and others, that the difference between the red blood corpuscles of man and of these domestic animals, is too minute to render their positive discrimination possible, and too insignificant to admit of its being used as the means of condemning a fellow creature to death. 2d. That even if the average diameters of these various corpuscles were shown to be so different that we might sometimes by this means distinguish them, yet the variations above and below the mean diameter are so frequent and irregular, that they must render the determination of any such averages by mere micrometric measurement unreliable; and 3d, many investigators believe, with Virchow and Brücke, that no microscopist can "hold himself justified in putting in question a man's life on the uncertain calculation of a blood corpuscle's ratio of contraction by drying."

In reply to the first of these objections, it may be urged, that the blood corpuscles are just as much characteristics of the different kinds of living beings in which they occur, as are the coverings of the body, the shape of the legs, or the number of joints in the antennæ, so that, exactly as we may tell, for example, a bird's skin from an animal's, by the former being covered with feathers, whilst the latter is furnished with hair, so we may distinguish a bird's or a camel's blood from that of a man, by the former having oval corpuscles, whilst those of the latter are rounded in their outline.

Further, in regard to the red blood disks of animals with rounded corpuscles, I can perhaps best illustrate the principles that guide us in their discrimination by suggesting that these bodies may be aptly compared to different sizes of shot. Thus, for instance, the red globules of man's blood are nearly twice the size of the sheep's, and about four times that of the musk deer's, just as No. 1 shot is perhaps double the magnitude of No. 5 and quadruple that of No. 8.

It is obvious, too, that a shot dealer in the latter case, or a skilful microscopist in the former, would more quickly and surely *distinguish* two analogous sizes of red blood, or of leaden *globules*, from each other, than could an inexperienced apprentice in either occupation.

Hence it follows, that whilst we might be in doubt whether the shot dissected out of the body of a wounded man was a No. 1 or a No. 2, we could have no hesitation, after measuring it with a gauge, in declaring it was too large for a No. 5, and *a fortiori* for a No. 8, precisely as the corpuscles of man's blood might be confounded with those of a monkey's, but on measurement are seen at once to be too large for those of an ox or sheep. Nor can it be disputed that *mere measurement* in either instance, when practically correct, is quite sufficient to decide a doubtful case, as, for example, if I was to shoot myself in the hand, and then assert that it had been done by some one else, whose gun was known to be loaded with No. 8 shot, whilst the grains in my flesh were actually of the size of No. 1.

It must be remembered, too, that whilst the relative differences between corpuscles of human, ox, and sheep's blood remain the same, the absolute difference becomes more perceptible in proportion as the disks are magnified above, for example, those represented in Dr. Taylor's work, so that when the former corpuscles appear $\frac{9}{8}$ of an inch and the latter $\frac{5}{8}$ of an inch across (as they do under the $\frac{1}{80}$), they can hardly be mistaken for another, any more than a 12-inch shell could be mistaken for a 6-inch shell, even by a careless person, who would call a No. 1 a No. 5 shot.

Ordinarily in criminal cases the microscopist is called upon to determine, not whether a particular specimen is human, as distinguished from all other kinds of blood, but to discriminate simply between the blood corpuscles of a man and an ox, a man and a horse, or a man and a sheep, and so establish or disprove the defendant's story as to how his clothing or other articles became stained with blood. Sometimes the much easier task is imposed (as in a recent case wherein I was engaged) of diagnosing between the blood of a human being and that of a bird (trial of Charles Larribee for the murder of Lewis Williams, at Franklin, Venango Co., Pa., see *Oil City Daily Derrick*, May 1st, 1874). In this instance many of the suspected stains occurred on the prisoner's boots, and proved upon that article of clothing singularly easy of detection.

Finally, I would remind those, who demur at the idea of allowing a man's life to hang upon such seemingly insignificant circumstances as a difference in size of blood corpuscles, how often the reactions of arsenic, afforded by a quantity of the metal too excessively trivial to be accurately estimated by the most delicate balance, have sufficed to bring out the crime of murder, and to aid in securing that just punishment for violation of law in which we all have so deep an interest, because on it all our enjoyment of life and property depends.

To the second objection, viz., that the variations above and below the standard size of corpuscles, from any particular animal, are too great and irregular to permit us to obtain an accurate result by measurement, I would answer, that this difference in size is more especially observable in corpuscles dried in a thin film upon a glass slide, and is then probably in part a pathological change due to external violence in spreading and drying. These variations are comparatively slight in fresh blood, as is proved by the following experiments, made with my $\frac{1}{80}$ th inch objective, which gives with the micrometer eye-piece an amplification of 3700 diameters. When thus magnified the human red blood disks appear about one inch and one-eighth in diameter, so that even slight differences in their size can be accurately measured. Among one hundred red corpuscles freshly drawn from five different persons, the maximum, minimum, and mean diameters were as follows :—

		Max.	Min.	Means.
Twenty from a white male aged	30	1-3231	1-3500	1-3355
" " " " " "	38	1-3281	1-3529	1-3375
" " " " female "	44	1-3249	1-3500	1-3381
" " " African " "	50	1-3182	1-3559	1-3384
" " " white male " "	8	1-3231	1-3500	1-3398

Average of means 1-3378

The measurement of twenty corpuscles from part of the first of these specimens dried in a thin film upon a slide gave a maximum of $\frac{1}{2800}$, a minimum of $\frac{1}{3621}$, and a mean diameter of $\frac{1}{3182}$ of an inch.

Moreover, if it can be shown that the smallest red discs of man, as usually met with in mechanically unaltered blood, whether dry or moist, are larger than the largest corpuscles of an ox, and *a fortiori* of a sheep, such an objection, as regards these particular animals at least, becomes valueless, and that this is the case I propose to presently demonstrate.

As illustrating the accuracy which some practical experience in measuring minute objects, like the red blood disks, with the cobweb micrometer enables us to attain, I may instance the following fact, which my friend, Prof. Theodore G. Wormley, M.D., of Columbus, Ohio, kindly permits me to mention here, but which may appear more in detail in his appendix on blood stains to the next edition of his splendid work on *Micro-Chemistry of Poisons*. During a recent visit to Philadelphia Prof. Wormley brought with him a slide of human blood, upon which were seven corpuscles (designated by numbers on an accompanying drawing), which he had measured under several different objectives and forms of apparatus. These corpuscles Dr. W. requested me to measure under my $\frac{1}{25}$ immersion lens, and after doing so, I found that my results agreed very closely with his own, and that in two or three instances they were precisely identical. The mean diameter of the seven disks, according to my computation, was $\frac{1}{3268}$ against $\frac{1}{3238}$ of an inch, the average of his measurements. There was thus a total deviation from the true size of only $\frac{1}{35257}$ of an inch in my results, which were those of an independent observer, seeing the objects for the first time, and determining their magnitude under a magnifying power, and by the aid of apparatus entirely different from those Prof. Wormley had employed.

Thirdly, the assertion of Virchow, that a man's life should not be put in question on the uncertain calculation of a blood corpuscle's ratio of contraction by drying, does not seem to me a fair statement of the point at issue; because since the red blood corpuscles of oxen, horses, pigs, sheep, deer, and goats are all much smaller than those of man, no degree of *contraction* which they could undergo would render the stains in which they occur *more* liable to be mistaken for man's blood; and if, as is rarely, if ever, the case, human red blood corpuscles in a stain were by any means contracted so as to resemble those of an ox, for instance, in size, the evi-

dence from microscopic examination would only mislead us into assisting in the acquittal of a criminal, and could not betray us into aiding to convict an innocent person.

Had Prof. Virchow worded his statement so as to read, "the uncertain calculation of a blood corpuscle's ratio of contraction *or expansion* by drying," his objection would have been strictly logical, although, as I believe, it would not have been founded upon fact, because if a corpuscle of ox blood could *expand* during the process of desiccation or of moistening so as to even approximate to the human red disk in magnitude, it might mislead us into testifying erroneously to the presence of man's blood, when beef blood alone had been shed, and thereby endangering the life of an individual who was entirely guiltless.

But my observations, made upon many different kinds of blood, and under a great variety of conditions, clearly indicate that the cell wall of a red blood globule is nearly or quite inelastic, and incapable of any marked expansion by the process of drying or moistening with the fluids I recommend for the examination of blood stains. The slight increase of size mentioned above as occurring in the desiccation of a thin film of blood, forms, I believe, only an apparent exception, and is probably due to a change of shape taking place during the complete flattening out of the disks as they lose their contained water. The experience of Prof. Leidy and Prof. Wormley accords with mine, in that they have never seen the drying or remoistening of red blood corpuscles cause them to expand, and I therefore conclude we may affirm that when the corpuscles remain uncontracted, their indications are perfectly reliable, and if they shrink (as I believe they rarely do), that being the only serious modification which they can undergo, the sole danger is that by a possible, but not probable, mistake in diagnosis of the origin of a blood stain through contraction of its corpuscles, we might contribute to a criminal's escape, *never* to the punishment of an innocent party.

But all these theoretical considerations are of very secondary importance in comparison with the positive fact, as to whether practically we can or cannot discriminate the stains of human blood from those made by the blood of oxen and sheep. I have, therefore, endeavoured to *work out* a conclusive answer to this question, obtaining it by a method which will, I trust, carry conviction to the mind of every honest seeker after truth.

On the 16th of May, 1874, my friends, Prof. J. J. Reese and Dr. S. Weir Mitchell, each kindly prepared for me three packages of dried blood from stains made by sprinkling the fresh fluid from an ox, a man, and a sheep, upon white paper. The two series were simply numbered 1, 2, and 3, and a memorandum preserved by each gentleman, specifying which kind of blood composed each sample. By this plan it is obvious that I was prevented from having any clue to the origin of the specimens save that

afforded by the microscope, and my examinations and measurements were, therefore, entirely free from bias.

Some small particles from specimen No. 1, handed me by Prof. Reese, were broken up into a fine dust, with a sharp knife upon a slide, and covered with a film of thin glass. A few drops of the ordinary three-quarter of one per cent. common salt solution were then successively introduced at one margin of the cover, and removed from the opposite edge, as they penetrated thither, by a little slip of blotting-paper, thus washing away the colouring matter from the tiny masses of dried clot. When these particles were nearly decolourized, a drop of aniline solution was allowed to flow in beneath the cover, and, after remaining about half a minute, was in its turn washed away, and its place supplied by a further portion of weak salt solution.

On adjusting the specimen as thus prepared, under a $\frac{1}{25}$ immersion lens (giving an amplification with the A. eye piece, of 1250 diameters), a fragment of the blood stain was soon discovered, which displayed the delicate cell walls of its component red and white corpuscles, as figured in my *Handbook of Medical Microscopy*, p. 284. Ten consecutive red disks from these, selected simply as among those which had become but little distorted, were found to measure as noted below in the first column. The second and third rows of figures show the result of similar experiments, performed on samples 2 and 3, all the magnitudes being given in parts of an English inch.

Specimen No. 1.	Specimen No. 2.	Specimen No. 3.
1-3448	1-4762	1-5555
1-3572 (minimum)	1-4762	1-6060
1-3572	1-4878 (minimum)	1-5405 (maximum)
1-3572	1-4651	1-5880
1-3333	1-4878	1-6666 (minimum)
1-3125 (maximum)	1-4444 (maximum)	1-6060
1-3448	1-4444	1-5777
1-3278	1-4762	1-5555
1-3333	1-4651	1-5888
1-3448	1-4762	1-5777
<hr/> 1-3407 (mean)	<hr/> 1-4694 (mean)	<hr/> 1-5828 (mean)

Since the red corpuscles of human, ox, and sheep's blood measure, according to Gulliver, $\frac{1}{3200}$, $\frac{1}{4267}$, and $\frac{1}{5300}$ of an inch respectively, and previous experiments of my own had demonstrated a disposition to slight contraction in the corpuscles of blood stains which have been dried and moistened again, I of course concluded that sample No. 1 was human blood, No. 2 was ox blood, and No. 3 was sheep's blood. On reporting these diagnoses to Prof. Reese, I had the satisfaction of learning that they were "entirely correct."

Careful examination of the three specimens furnished me by Dr. Mitchell, and prepared in a manner similar to that detailed above (except that

diluted liq. iodinii comp. was used instead of aniline liquid for tinting the cellular elements), led me to analogous conclusions, as will be seen from the following table of measurements :—

Specimen No. 1.	Specimen No. 2.	Specimen No. 3.
1-4545	1-6250	1-3572
1-4762	1-6250	1-3390
1-4878 (minimum)	1-6060	1-3175 (maximum)
1-4347 (maximum)	1-6450 (minimum)	1-3278
1-4444	1-5880	1-3448
1-4762	1-5777	1-3333
1-4651	1-5555	1-3572
1-4878	1-5405 (maximum)	1-3390
1-4545	1-6250	1-3572 (minimum)
1-4878	1-5880	1-3636
<hr/> 1-4662 (mean)	<hr/> 1-5952 (mean)	<hr/> 1-3430 (mean)

From these results, I of course decided that No. 1 was ox blood, No. 2 was sheep's blood, and No. 3 was human blood, and on reporting my conclusions to Dr. Mitchell, I was again very much gratified to receive a reply informing me that they were perfectly correct.

It is interesting and important to observe, that in no instance do the minimum diameters of the human blood corpuscles closely approach the maximum diameter of even those from ox blood. It is true that corpuscles are occasionally to be met with both in fresh blood and in dried clot, which fall much below the general average of the specimen, but these are comparatively rare (not amounting to over one in a hundred), and they so generally in fresh blood bear such marks of traumatic injury or pathological change, that it is only fair to disregard them in making up our estimates. If my views are correct respecting the osmotic processes constantly going on through the cell wall of both the red and the white corpuscles (*vide* Report on the Structure of the White Blood Corpuscle, *Trans. of Am. Med. Assoc.*, 1872, p. 178), alterations in the specific gravity of the liquor sanguinis, surrounding the corpuscles, produced by desiccation at the margin of the thin glass cover, must cause slight changes in the diameter of the disks. Nevertheless, as these variations necessarily lie between their normal size ($\frac{1}{3378}$?), and their magnitude when dried upon a slide ($\frac{1}{3188}$?), they can never lead to confusion in diagnosis even from ox blood.

In regard to the practical minutiae of the examination of blood stains, I have little to add to the description given a page or two back, except concerning the menstrua advised by various authors.

The saturated solution of sulphate of soda recommended by Prof. Charles Robin, and endorsed by numerous authorities, has the disadvantage of rapidly crystallizing around the specimen, and must, I think, owe its popularity chiefly to the fact that it often contains large quantities of a peculiar

fungus, the spores of which closely resemble red blood corpuscles both in size and general appearance, and have, I doubt not, frequently been mistaken for blood cells. Diluted albumen and solution of hypophosphite of soda have not in my hands seemed to possess any peculiar advantages, and the method of Erpenbeck, quoted by Prof. Taylor, of gently breathing on the fragments of blood clot until they are sufficiently moistened to liquefy, will not, I believe, in general enable us to demonstrate any corpuscles except the leucocytes of the coagulum. These leucocytes have probably often been mistaken by observers for "decolourized red disks."

The highly refractive properties of glycerin and its solutions advised by Dr. Taylor and others, render it in my judgment less applicable as a liquid for moistening blood stains and bringing into view the delicate cell walls of their constituent corpuscles than the 75 per cent. salt solution. I can, however, fully agree with my friend, Dr. R. M. Bertolet, that for preservation and prolonged study of specimens of blood stains, glycerin forms the best medium at our disposal, although it seems to me that his suggestion, that we should before mounting them tint the cell walls and nuclei of oviparous blood corpuscles with the reagents employed in the admirable guaiacum test for blood, will be found in practice less advantageous than my own plan of using aniline solution. And this in part on account of the difficulty of procuring the ethereal proportion of peroxide of hydrogen, and of applying it to microscopic specimens, and partly because it will prove so much harder to convince the average jurymen that a bright blue material (instead of a crimson-red substance) is actually clotted blood.

In examining spots of blood more than one-tenth of an inch in diameter, I would advise that fragments should be scraped from the edges or thinnest parts of the stain, because specimens from the central portions sometimes exhibit numerous fibrin filaments, which have appeared before the desiccation of the drop. These of course interfere with the investigation, by forming a more or less complete meshwork around the cell walls, and so confusing the delicate outlines which the latter present when the view is uninterrupted.

As a contribution towards answering the question of how long after their deposit upon objects blood stains may be detected by microscopic investigation, I may mention that a fragment from one of the twenty blood spots used in May 1869, "for estimating the delicacy of the microscopic test for blood" (determined at $\frac{1}{12666}$ of a grain, as stated in my paper in vol. 58, N. S., of this Journal, p. 57) was recently examined as above described, and found still at the end of *five years* to exhibit multitudes of corpuscles, which could be clearly distinguished from those of the ox or sheep, as will be seen by the following record of measurements made May 23, 1874:—

1-3572	of an inch.	
1-3448	" "	
1-3278	" "	
1-3125	" "	maximum.
1-3390	" "	
1-3509	" "	
1-3448	" "	
1-3509	" "	
1-3572	" "	minimum.
1-3448	" "	
1-3425	" "	mean of ten corpuscles.

The corresponding average of my measurements five years ago was $\frac{1}{3474}$ of an inch, so that no further contraction seems to result from age, and as the outlines of the corpuscles appear quite as distinct now as they did soon after the blood was drawn, it seems probable that this microscopic evidence of human bloodshed will be equally unmistakable twenty or even fifty years hence, provided due care continues to be exercised in its preservation from moisture and external violence.

In conclusion, I submit, that the results of my experiments above narrated *prove, that*, since the red blood globules of the pig ($\frac{1}{4230}$), the ox ($\frac{1}{4267}$), the red deer ($\frac{1}{4324}$), the cat ($\frac{1}{4404}$), the horse ($\frac{1}{4600}$), the sheep ($\frac{1}{5300}$), and the goat ($\frac{1}{5388}$ of an inch), are all so much smaller than even the ordinary minimum size of the human red disk, as measured in my investigations, *we are now able, by the aid of high powers of the microscope*, and under favourable circumstances, to positively distinguish stains produced by human blood from those caused by the blood of any of the animals just enumerated, and this even after the lapse of five years from the date of their primary production.

No. 1620 CHESTNUT STREET, PHILADELPHIA.

ART. VII.—*On Transfusion of Blood, with a Report of Eight Cases, and a Description of a Convenient Apparatus for Performing the Mediate Method.* By THOMAS G. MORTON, M.D., one of the Attending Surgeons of the Pennsylvania Hospital; Emeritus Surgeon to Wills (Ophthalmic) Hospital, Philadelphia. (With three wood-cuts.)

TRANSFUSION of blood may be so readily performed, and with such entire safety, that it is somewhat surprising that this recognized life-saving operation has not been resorted to more frequently.

Transfusion seems especially indicated where death is imminent from hemorrhage; while in the slow convalescence after fevers, in anæmia, and in diseases accompanied by excessive drain, or in cases of blood poisoning,

this operation, by introducing a vigorous healthy element directly into the circulation, would seem particularly applicable.

In transfusion the surgeon has the choice between the immediate and the mediate methods; in the former arterial or venous blood is conducted direct from an artery or a vein in the donor into a vein of the receiver. In the mediate method the blood of the donor is defibrinated, strained, and then injected.

I am not aware that the immediate operation has ever been performed in this city, while the transfusion of defibrinated blood has been very successfully done a number of times.

In the immediate method small clots of blood it is supposed are liable to form in the connecting rubber tubing between the donor and the receiver, and these if injected would doubtless produce serious results; venous blood is also generally transfused, since arteriotomy is seldom if ever recommended.

Immediate transfusion from the radial artery, as has been suggested, would answer admirably for the receiver, but donors of blood, although they might be willing to submit to venesection, would hardly allow the opening of a main artery.

Having used defibrinated blood now in four cases with such perfectly satisfactory results, I see no reason to relinquish this plan in favour of the immediate method.

1st. There is no danger from the formation of clots, or from the introduction of air.

2d. The donor's blood, which is venous when drawn, is partially oxygenized by its exposure during defibrination.

3d. The amount injected is readily measured.

4th. The avoidance of all haste in the operation.

5th. Drawing the blood and its defibrination need not be conducted before the patient.

Dr. J. G. Allen has furnished me with a report of his four operations, with a note respecting my first case at the Pennsylvania Hospital, one of impending dissolution from hemorrhage, when I had Dr. Allen's assistance, who had twice successfully performed transfusion.

The apparatus we then used was not altogether satisfactory; it was simply a tin receiver, in which the blood was collected and defibrinated, a syringe and canula attached.

Mr. Kolbé afterwards made, at my suggestion, a more compact set of instruments, consisting of a receiver which was suggested by Dr. Allen, and so arranged that the blood is constantly surrounded by warm water, to this was added a thermometer; a glass syringe, and blunt canulas, lancets, and an extra thermometer complete the case.

Description of Instruments.—The receiver is a cylindrical vessel, made of German silver, six inches in diameter, and six inches in height, having

at its upper and outer edge a short half-inch metal tube, closed by a screw cap through which water is introduced into the water-tight chamber; on the outside is a thermometer, the curved bulb of which lies in the chamber, and by which the temperature of the water is regulated. In the interior is an inverted cone gilded on the exposed surface, into which the blood is drawn; this cone is joined to the outer vessel at the top; a broad lip is attached to the upper part of the receiver, extending about one-third of the way around. (See Figs. 1, 2.)

Fig. 1.

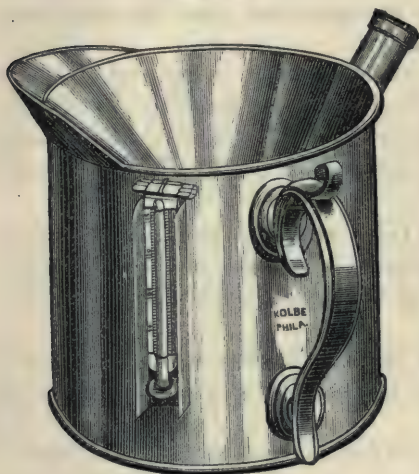


Fig. 2.

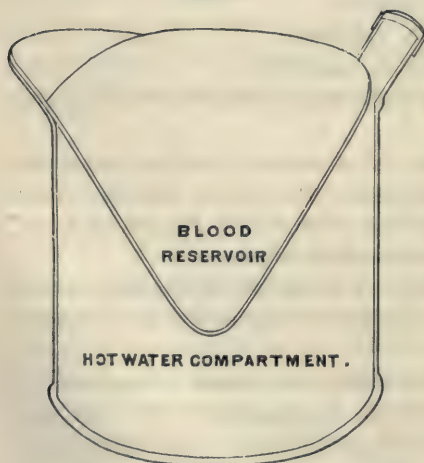
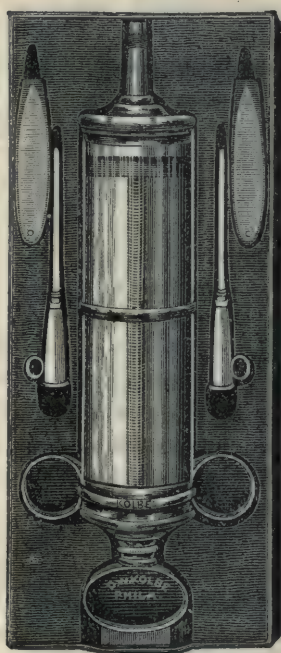


Fig. 3.



The syringe is of glass, five inches long by one inch in width, metal bound with hard rubber at each end, holding two ounces, with a tapering rubber nozzle one and a half inches in length. The canulas are blunt steel tubes, two inches long and one-twentieth of an inch in diameter, to which

is attached a conical metal neck, into which the tapering extremity of the syringe accurately fits. (See Fig. 3.) An ordinary thumb lancet or two completes the case. Besides these instruments a tumbler or bowl, surrounded by hot water at the time of operation, to receive the blood while it is being strained, and some fine linen will be required. Two or three whisks, six inches long by an inch thick, should be at hand, simply tied together in the middle so that both ends may be made available; these are quickly made from a common clothes whisk or broom.

Method of Defibrination.—The hot water compartment (Fig. 2) is filled through the tube with water at a temperature of from 110° to 112° , which can be regulated by the thermometer. The blood drawn from the donor is collected in the receiver and constantly kept stirred with a whisk, upon which the fibrin quickly collects. Should one whisk become choked another may be substituted. The blood, when defibrinated, is then strained through some fine clean linen into a tumbler or bowl surrounded by water at the temperature before indicated. While the straining is progressing, which occupies a minute or two, the receiver is carefully washed out, and the strained blood poured back and is now ready for injection.

Operation.—Either the median cephalic or the median basilic vein, or in young subjects the saphena just above the ankle, should be exposed and opened by an incision on a line with the vessel; a blunt canula is then inserted and held in place by the finger of an assistant; should the distal end of the vein bleed, it is readily controlled either by pressure or an acupressure pin. The syringe is immersed for a moment in hot water, and then *not quite* filled with the defibrinated blood; the nozzle is then placed in the canula, and the piston being then drawn out to its full extent, any particles of air which may have been in the canula or tube are sucked out, and with a slight elevation of the syringe, pass through the contents of the syringe to the top.

The blood is then slowly and steadily thrown into the patient, and the operation repeated until the desired amount has been injected. During transfusion, except in one instance, I have not observed any marked change either in respiration or the circulation. In the case alluded to, at the close of the operation the patient, who was at the time unconscious, showed an oppressed state of breathing, which looked serious, but soon vanished on opening the windows. Dr. Allen thought at the time this might have been due to the entrance of some bubbles of air.

The largest amount of blood which I have transfused was eleven ounces, the smallest quantity two ounces; in this case the small amount injected was found quite sufficient to stimulate the heart to active contraction, when all the symptoms indicated that life was on the verge of extinction.

In this instance, a child of eleven years of age, I had very great difficulty in finding the vein in the arm, the vessels being exceedingly small, and quite collapsed, so that a somewhat tedious dissection was necessary.

Defibrination is objected to on the ground that a large quantity of the red globules are unavoidably removed with the fibrin; this I am inclined to

believe is not so much as supposed, for I have found the fibrin collect at the end of the whisk with apparently very few of the globules.

I do not apprehend, nor have I known of any trouble arising from opening a vein, which has been suggested, and to avoid this the use of the sharp aspirator like needle has been recommended

I tried in two of my transfusions thus to introduce the sharp needle, wishing to avoid exposing the vein, but had to abandon the attempt in both instances; the vessels were collapsed, and the injection could not be made to pass, as the needle point invariably and unavoidably punctured the opposite wall of the vein.

It has also been stated as an argument in favour of immediate transfusion that clots are not liable to form in the connecting tube, that "as the fluid is drawn into a vacuum, there is no danger of coagula forming."¹ While "coagulation is accelerated by exposure to air, it is not prevented by complete exclusion from it, as is proved by its taking place in a vacuum,"² and any one who has ever used the artificial leech may have observed, that coagula form almost at once in the exhausting syringe, which is essentially in vacuo.

The question of loss of time in performing the various steps incident to defibrination has also been urged against the mediate method; but I believe that the defibrinating process may be completed almost if not quite as quickly as any apparatus for the immediate transfusion can be arranged.

CASE I. Lacerated wound of face and upper jaw; hemorrhagic diathesis; continued hemorrhage; ligation of the common carotid artery; transfusion; death from rupture of jugular vein.—On the 15th of October, 1869, W. P., aged 27, was admitted into the Pennsylvania Hospital on account of continued hemorrhage from a severe laceration of the upper lip and jaw. Eight days before admission he fell down stairs while carrying a pitcher; a fragment of the broken china penetrated deeply the inner surface of the upper lip a little to the left of the median line, producing a very deep irregular ugly wound. When admitted he was exceedingly weak from the loss of blood; his mouth was full of clots which were washed out, and plugs of lint saturated with the persulphate of iron inserted; hemorrhage again took place two hours afterwards, which was only stopped by the direct application of a compress and roller placed on each side of the nose. At 5 P. M. hemorrhage again occurred, and a long accupressure needle was passed entirely through the upper lip and a silk ligature thrown tightly over it. Till the morning of the 19th no more hemorrhage took place. It then recurred, and both facials were compressed by needles upon the lower jaw, which, however, did not check the flow of blood. 7 P. M. After consultation with Dr. Wm. Hunt, ligation of the external carotid was decided upon; but, finding this impracticable, the ligature was placed on the main vessel, the patient being nearly exsanguine and totally unconscious. Slight oozing from the wound continued.

20th. The patient, although not having lost much since the operation,

¹ New York Med. Record, March 30, 1874. Rowe on Transfusion.

² Carpenter's Phys., Am. ed., p. 210.

was in a comatose condition and appeared to be dying. With Dr. Allen's assistance and direction, transfusion was performed by the mediate method at 4 P. M., assisted by Dr. Hunt, and Dr. Hunter the resident physician, in the presence of a number of medical gentlemen; Drs. W. C. Cox and Haines, then students of medicine, gave the desired amount of blood. Eleven ounces of defibrinated blood were transfused; a marked rigor followed the operation. In two hours afterwards the patient was semi-conscious.

21st. The lips had a better colour, and he was perfectly rational and able to sit up in bed, and without any further hemorrhage.

26th. He was walking about the ward and was presented to the medical class. He continued to improve till November 3d, when the internal jugular vein gave way, causing death on the 5th of the same month. The operation of transfusion prolonged the life of the patient over two weeks.

CASE II. *Suspected carcinoma of the stomach; marked leucocythemic symptoms with great prostration; transfusion; relief; death four months afterwards from cancer.*—I was consulted in August, 1870, by Mr. C. K., a German gentleman, aged 45, who had been suffering for a long time with gastric derangement, his symptoms having gradually assumed a rather severe character with marked jaundice and dysenteric symptoms. The patient had an excellent physique, with formerly a fine florid complexion, of late a sallow waxy hue; his weight was usually 180 pounds, but during the preceding month or two he had lost considerably; food was rather disgusting to him, and what little he took produced much discomfort; scarcely a day passed without one or more attacks of vomiting; a considerable quantity of disorganized blood was frequently mixed with the matter ejected. He had been a very free liver; used to late suppers, and had for years drank to excess. A careful examination failed to detect any abdominal tenderness or tumour, and an analysis of the urine was made by Dr. J. G. Richardson, disclosing no renal trouble. The patient was placed upon the "milk cure" for three weeks; this was followed by a very carefully regulated diet with nutritious injections. A trip to the mountains was also very beneficial, and produced marked improvement. At the close of September the old symptoms, vomiting and distress, returned, and day after day he gradually became weaker and was soon confined to bed. Champagne and beef-tea were prescribed, and the nutritious enemata were given every four hours with good results. The bloodless appearance of the patient and the absence of any abdominal tumour, with slight tendency to œdema of the hands and feet, gave rise to the idea that possibly the affection might be simply leucocythemia; the skin, mucous membrane of the mouth, and gums presented an absolutely blanched appearance; in fact, the patient looked as if he did not possess a globule of red blood; although able to retain a considerable part of the nourishment taken, yet no portion of it seemed to be assimilated, and from the excessive prostration, death seemed inevitable at an early period. Drs. J. F. Meigs and Mitchell saw the patient on several occasions in consultation. In November, death appearing imminent, transfusion was suggested to the patient, and the operation immediately agreed upon; for should the disease be cancer, life would likely be prolonged, and if his disease should prove simply an inability of the digestive organs to assimilate, a favourable change might be induced by transfusion. Accordingly the operation was performed as previously described, November 12, 1870, with the assistance of Drs. Mitchell, Hunt, Brinton, and others. The donor of the blood was a nephew of the patient, a stout, vigorous

young man ; rather more than six ounces of defibrinated blood were injected into the median basilic vein of the left arm. The syringe was filled three times, and no unpleasant symptom was observed, either in the respiration or circulation, during or after the operation.

The gums and lips of the patient, which had an absolutely blanched appearance, quickly assumed a decided tint which gradually deepened. A comfortable night was passed, and on the following day there was a marked change for the better ; his strength and spirits revived, and a very decided improvement in all respects was observed.

The nutritious enemata were continued, with champagne and broths by mouth.

Two months after the transfusion his health began to fail rapidly, with constant sick stomach, great and rapid emaciation, and death occurred March 23, 1871. At the post-mortem examination very extensive carcinomatous ulceration was found to involve the *upper* surface of the stomach, and especially the cardiac extremity ; the pylorus was free from the disease.

In this case the transfusion gave temporarily a new lease of life ; for the patient could not have long survived the terribly prostrated condition he was in at the time of the operation.

I attempted here to introduce the sharp needle without exposing the vein, but found it impossible, from the collapsed state of the vessel.

CASE III. *Hæmorrhœa petechialis ; repeated epistaxis, associated with alveolar hemorrhage ; almost fatal prostration ; transfusion twice performed at intervals of six weeks, with recovery.*—Ida H., aged 11, a slender girl, in apparently good health, was suddenly seized, September, 1871, with copious bleeding from the left nostril and bladder ; at the same time her entire body presented the characteristic petechia purpura, minute spots appearing over the entire body, with large ecchymoses on the limbs an inch to an inch and a half in diameter.

The child was so much reduced by the loss of blood that for nine months she was confined to her bed, and during this period scarcely a day passed without some bleeding ; gradually she regained her strength. In September, 1872, she had a severe recurrence of the hemorrhage which nearly proved fatal ; the nasal bleeding was controlled by injections of persulphate of iron and plugging the nose. As in the first attack, the body was entirely covered with ecchymotic spots ; the extravasations of blood on the front of the legs were of enormous size. On Feb. 2, 1874, the third attack was ushered in by hæmorrhœa petechialis followed by continued nasal hemorrhage ; the child was drenched with blood and exceedingly prostrated ; the use of alum water with plugging the nostrils controlled the flow, and under iron, champagne, beef-tea, and punch improvement followed. February 8, the spots appeared again and hemorrhage occurred, and before relief could be obtained, the bleeding was so profuse that the child was almost exsanguine ; the blood found its way back as well as front, and had been vomited in large quantities ; no pulse could be felt at the wrists, and her extremities were cold, and death seemed imminent. Large blue patches of effused blood appeared under the skin especially on the limbs, and her entire body was covered with the smaller purpuric spots.

Transfusion was proposed and immediately agreed upon, and performed with the aid of Dr. Wm. C. Cox, at 12.30 P. M. ; the uncle of the child gave the blood, which was defibrinated. The median cephalic vein in the left arm of the child was opened after much difficulty, on account of the very small size and collapsed condition of the vessel, which could not be

found until after considerable dissection. A blunt cannula was then introduced and two ounces of blood were injected; no unpleasant symptom was experienced by the patient during the procedure; the pulse, which was imperceptible prior to the transfusion, could now be counted; a comfortable night was passed; pulse 136.

February 12. A slight appearance of blood from the nose, but stopped without treatment; pulse 94; temp. 98°. Beef-tea and champagne were continued.

13th. Patient up, and doing well.

14th. The child was out driving, and was very comfortable and quite strong, with digestive organs in good condition. She continued apparently well until the afternoon of the 29th of March, when hemorrhage came on from the gum of the lower jaw, where one of the first teeth had fallen out. Towards evening the ecchymosed patches and purpuric spots again announced a serious condition, and severe nasal hemorrhage occurred. I did not see the child until 11 P. M., and then found her almost bloodless and without pulse, bathed in cold perspiration, and in a dying state. With Dr. Cox's assistance I again performed transfusion; the aunt of the child, a stout lady of 35 years of age, was the donor of the blood; defibrination, as previously described, was effected in a very few moments. Having so much difficulty with the vein in the arm previously, I selected the saphena vein of the right leg just above the ankle, which was laid bare, and a pin passed under its distal end and compressed by a silk ligature. Six ounces were satisfactorily injected, and with immediate good effect. Two grains of quinia with stimulants and opiates were administered, five grains of protocarb. iron were ordered three times a day; some milk-punch, beef-tea, etc., and at the end of a week the emulsion of cod-liver oil with lactophosphate of lime was added.

April 7. Doing well, up, going about as usual, excellent pulse, no appearance of having lately suffered the loss of so much blood.

May 26th. Is in perfect health.

The rapid improvement and recovery following each transfusion, presents a marked contrast with the tardy convalescence, with confinement to bed during nine months, which followed the first hemorrhage, in 1871; while the transfusion, which was performed twice in this patient, is rendered more interesting from the fact of the subject being so young.

The following notes of cases have been obligingly communicated to me by Dr. J. G. ALLEN.

CASE I. Was that of a patient of Dr. Wm. Carroll. December 30, 1868; a Mrs. P., residing in Dock Street. She was suffering from hydræmia consequent upon long-continued and repeated uterine hemorrhages in connection with a stubborn though mild type of intermittent malarial fever. She had not improved in the least under long-continued previous tonic treatment, which had been carefully carried out, in connection with some local treatment of the uterus, which was patulous and spongy, the os being studded over with a few pale granulations. She was scarcely able to move in her bed from weakness, at the time of the operation. At least six ounces (6 oz.) of defibrinated blood were injected. The patient soon after rallied and regained a very satisfactory degree of health. About eighteen months afterward she became pregnant and aborted at fourth or fifth month. Meanwhile had ceased to employ Dr. Carroll and fell into the hands of a very unskillful practitioner, and died from hemorrhage connected with this miscarriage.

CASE II. Occurred in a member of the medical profession, suffering from purpura hemorrhagica; he was about twenty-six years of age, and I believe of

phthisical inheritance, and had a marked so-called scrofulous diathesis. In early life had suffered from repeated abscess and ulceration of the neck involving the cervical glands; had been frequently the victim of obstinate epistaxis.

For a few days previous to the operation he had been bleeding from the posterior nares, to stop which all efforts were unavailing. After a time the blood began to ooze freely and rather rapidly from the gums and almost all portions of the mucous surface of the mouth. The blood seemed wholly disorganized, and the patient was in the most deplorable condition, literally at death's door. About seven or eight ounces of defibrinated blood were injected, and in six or eight hours after the operation the blood which had been oozing from the patient's mouth and nose began to coagulate, and finally ceased to flow. No one had expected the man to live twelve hours at the time of the operation, the immediate effect of which was undoubtedly beneficial, as the patient revived and lived I think more than a month afterward; the hemorrhages, however, recurred, and the patient finally succumbed to the continued losses of blood and inherited vice of constitution.

Dr. Carroll assisted at the first operation, and Dr. Hoehling of the Navy assisted me at both, and has reported the cases.¹ Dr. H. errs, however, as to the quantity of blood injected. I have since measured the syringe used, and found it to hold more than we at the time estimated. The case first reported I believe to be the first successful instance of transfusion in America and the first attempt by Mader's method.

CASE III. Was a patient of your own in the wards of the Pennsylvania Hospital. I allude to the case of wound of the upper lip from falling upon a fragment of broken pitcher which the patient was carrying.

One point I desire specially to call your attention to in this case: the patient, as you know, was extremely prostrated at the time of the operation; he was upon a low and inconvenient hospital bed, and we were excessively crowded by a great number of medical gentlemen and students who witnessed the operation. You will remember we accidentally passed into his vein two or three little bubbles of air not larger than a pea, a kind of froth which had collected upon the blood in the syringe, this was, after the operation, followed by, and the probable cause of, the fit of gasping and threatened syncope which lasted about a half minute, and which was at the time attributed to want of air from many persons crowding over the bed.

CASE IV. Was another patient at the Pennsylvania Hospital under the care of Drs. Agnew and Hewson. The man was of very intemperate habits, and while drunk had fallen off a street car on the third day of July, 1869, and had his leg crushed under the car wheel.

At the time of the operation, he was in a collapsed condition; reaction, however, took place, and the leg was amputated ten or twelve hours after. This patient did not recover. Death occurred July 19th.

CASE V. Was a patient of Dr. ———. Hemorrhage from bowels; it occurred some time during the summer of 1869. Prof. Gross was in consultation.

The patient died a few hours after the operation. In both these latter cases there had been excessive hemorrhage, and the venous system was utterly collapsed, causing very great difficulty in getting the canula into the vein, so that the operation was in neither case very satisfactorily performed.

After the experience of the first two operations I invented the bowl for the reception of the blood and keeping it warm.

¹ Medical and Surgical Reporter, May 15, 1869.

ART. VIII.—*Case of Mollities Ossium.* By JOHN NEILL, M.D., Associate Professor of Clinical Surgery in the Hospital of the University of Pennsylvania.

So few instances of this disease have occurred in this country that I think it a duty to place upon record the following case, and at the same time to notice a few others which have been recorded elsewhere.

Mr. B., a merchant of Philadelphia, was born in Virginia, of healthy parents, one of whom died from yellow fever, and the other from ———. He was a tall, spare-built man, and although not robust, never had any disease of sufficient consequence to confine him to the house, except an attack of pneumonia of the right lung, six or eight years previously to his last illness, from which he recovered without any remaining complications. His habits were active and regular.

In the summer of 1869, he was seized with a pain in his right thigh, which was supposed to be rheumatism; and although there was very decided swelling of the ankle-joint, it did not confine him to the house, until December, when he suffered so much, that he went out but occasionally; after February, 1870, he was confined to his bed. He suffered from severe, deep-seated pain in the middle of the thigh, and the swelling of the ankle continued. He became thinner and weaker, although his appetite was not merely good, but voracious. His food seemed not to inconvenience his digestive apparatus, although but little of it was appropriated. He suffered to some extent from retention of urine, and about the last of July his suffering became very severe, and his attention was suddenly attracted to a prominence upon his thigh, which had occurred in the night.

At this period he came under my care, and I obtained this previous history from others, and not from my own observations. Upon examination of the limb, the deformity was so striking and marked, that it could not well be mistaken; the thigh was bent in the middle, almost to a right angle; the skin was very hot to the touch, and of a dusky-red appearance. Through the integuments and muscles, the bone could be felt, and there was evidently an increase of diameter at the bent portion. The foot, ankle, and lower half of the leg were œdematous, and he referred much of his pain to the ankle. The other limb was extremely emaciated, and indeed his whole body resembled that of a person in advanced and prolonged phthisis. His appetite was still good, in fact, craving; he had great zest in eating and drinking, but his digestion was impaired, and his food, instead of nourishing him, seemed only to act as an irritant to his bowels. Diarrhœa became profuse even when his diet was most carefully regulated, and medicine had very little control over it. His discharges were not only frequent, but of a most unusually offensive character.

The treatment, which consisted of nourishment, opiates, and tonics, had little or no effect, and he died September 26, 1870.

The *post-mortem examination* was permitted, on a promise of restricting the inspection to the diseased limb only. Upon removing the soft parts, which were there expanded, the periosteum over the diseased portions was thickened and of a deeper colour. The bone was one and three-quarters of an inch thick at the bend, and this thickness gradually diminished up and down the shaft towards the epiphyses. In the handling

to which the limb was subjected, there was no flexibility. With an ordinary large scalpel, making firm pressure, I made two semi-elliptical incisions, approaching each other through the bone, longitudinally, and deep enough to reach the medullary canal; the knife went through easily, yet the tissue had some firmness, especially under the periosteum.

Upon an examination of this section, the solid, dense, laminated structure of the shaft of the bone was entirely gone, and in its place had been elaborated a cancellated spongy structure containing oil and bloody serum. The thin edge of this section was flexible, tough, and elastic. After the piece had been washed, the walls were observed to be thinner as they approached the medullary canal, and they were semi-transparent, of a yellowish-brown colour, cartilaginous, but tougher and harder to the touch than the cut extremity of a femur which had been softened in muriatic acid for the purpose of exhibiting the animal matter of bone.

The medullary canal was filled with the same material as the cancelli, a thick, dark coloured, reddish, semi-fluid pulp.

We have been able to discover but two cases of this disease which had occurred in this country, and we present an analysis of the striking features of them.

Dr. Tenny, of Webster, Mass., records in the No. of this Journal for October, 1839, p. 506, a case of a woman 43 years of age, and the mother of five children, who died after two years' illness. At first she manifested general weakness especially in her lower limbs, producing an alteration in her gait. The slightest impediment threw her down; her appetite continued good, and her stomach retained and digested food; she became unable to support her weight, and was confined to bed when her thigh-bone was found flexed at a right angle near the centre. The patient was not sensible of it until it was accidentally discovered, and supposed to be broken; but the extreme emaciation showed that the limb was bent spontaneously, and that the bones were in the same condition.

Autopsy.—Edema of the lower extremities; upon cutting down upon the bone it was found to have been doubled over on itself in such a manner that without altering the general direction of the limb, it had shortened it about two inches, besides which there was a rectangular deformity. The bone was so soft as to be easily pierced by a scalpel. The medulla was disorganized, and the cavity appeared to be filled by a clot of blood. Immediately beneath the periosteum the bone was firmer than elsewhere, though it could be crushed between the fingers.

Dr. Jones, of New Orleans, records (*Trans. Am. Med. Assoc.*, vol. xx. 1869) a case of a young woman eighteen years of age, of humble life, being in great poverty, and supported by alms in a hovel. The father and mother were unhealthy, pale, and cadaverous, and for a long time had been the victims of malaria. The softening of the bones commenced in the leg after an attack of ague. The left humerus lost all its earthy matter for the space of five inches, and she suffered great pain; the upper and lower end seemed to be bony, but the intervening part had been converted into a flexible cartilaginous mass; the arm could be bent at right angles; the right humerus was rough and enlarged, and painful to the touch, and the right radius was apparently destroyed; the left tibia and fibula were divided or absorbed; and her mother states that this leg "was fractured at night with an audible snap." Although eighteen years of age, she was only three feet nine inches high, and weighed not more than a child four years of age.

It is believed that these are the only cases recorded as such in American journals, and in addition we give a condensed account of several others, which have been reported very fully in Dr. Jones's excellent paper.

Mr. Sylvanus Bevan, F.R.S. (*Philos. Trans.*, vol. xlii. No. 470), states that a woman in 1738 was seized with diabetes, and after eighteen months of fever and wasting and pain, was obliged to go to bed. The bones in her arms and legs became soft to the touch, and could be bent in a curve, and finally became as limber as a rag.

Post-mortem examination.—The outer laminæ of the bones were soft and membranous, containing, instead of a bony substance, a thick fluid of reddish colour. There was no appearance of bones in her legs and arms except near the joints, but what remained was soft and full of holes like a honey-comb. Those parts of the bones that were most compact and hard were dissolved first, whilst their heads, which were more spongy and soft, had not so entirely lost their substance.

Ambrose Hosty, M.D., reports (*Philos. Trans.*, vol. xlviii.) the case of Ann Elizabeth Queriot in 1753. She was 35 years of age, married, and confined three times. After her last labour she was seized with pain in her limbs, and became bed-ridden and distorted; all the bones were affected. The lower extremities turned upward, and became parallel with her body. This state was attended with exquisite pain.

Post-mortem.—Upon cutting in the left tibia some parts were entirely dissolved, and the sides were not thicker than the gristle of the ear. Instead of the marrow, a thick red matter like coagulated blood mixed with grease was found in all the bones.

John Pringle, M.D., F.R.S., reports the case (*Philos. Trans.*, 1753, vol. xlviii.) of Mary Hayes, who heard her bone snap while walking, after which the bones of the legs and thighs grew flexible. Her spine became distorted; she was confined to her bed, wasted and died, and her body was two feet shorter than when living.

Post-mortem examination.—All the bones were more or less affected, and scarcely any would resist the knife. They were so soft that they were cut through without using the edge of the knife. Those bones were most dissolved which were in the natural state most compact, and contained most marrow in their cavities, and the heads of them were the last portions dissolved. The interior was filled with a dark, pulpy, parenchymatous substance like soft dark-coloured liver.

Thomas K. Chambers, M.D., reports (*Lancet*, March 25, 1854) the case of a young woman who had a spontaneous fracture, first of one thigh and then of the other, in St. George's Hospital. She suffered great pain in both arms, which became paralyzed. The pelvis and ribs fell in, and she died in a year. The bones throughout the system were found soft and unresisting; a sharp knife could readily pass through them. A section of the tibia was of the colour of muscle, its shape being retained by the periosteum. "The microscope exhibited the bone as consisting of large fat vesicles, some containing a white and some a reddish oil. The parts next the periosteum, which felt gritty, presented, when examined under a quarter-inch object-glass, some islands of opaque bone, the bone corpuscles being indistinct and the canaliculi not to be discovered.

Mr. S. Solly reports two cases, the first (*Med.-Chir. Trans.*, vol. xxvii.) being that of a young woman whose health began to decline at nineteen, and whose bones fractured easily, and whose spine became distorted. She suffered great pain. Her head became enlarged, and her mind became affected. She was unable to stand, and had to push herself from place to place. She became much emaciated, and suffered excruciating pains in her bones. Her appetite was good. She was twenty-nine when she died.

Post-mortem examination.—A longitudinal section of the long bones showed that the osseous structure of the bone was nearly absorbed, a mere shell being left. The interior was filled with a dark grumous matter, varying in colour from that of dark blood to light-reddish liver-colour. The Haversian canals were enormously dilated, and the osseous corpuscles diminished in quantity. The joints were all healthy.

The second case (*Med.-Chir. Review*, April, 1845) was Sarah Newbury, 39 years of age; married for nine years, no children. Was robust until she had an attack of rheumatism, when she fell, and was subsequently confined to her room.

She suffered great pain in her bones, and was hardly able to walk. When her husband was carrying her, her thighs were suddenly drawn up. The spine became curved, the clavicles, which had been previously fractured, were now bent. Both thighs were broken, the left twisted inward and the right bent at an acute angle in the centre. Subsequently the right foot was completely drawn over her head, in the same position as is represented in the case of Madame Supiot, *née* Quenot. She died after eight years' sickness.

The *post-mortem* was very carefully performed, and numerous sections were made of all the bones which were generally diseased. But that of the right thigh was the most characteristic. The whole of the osseous matter had been removed, and in the centre nothing but periosteum and membranous matter left. Towards the condyles the bone was nearly of its natural colour. In the lower third the red matter was abundant, exhibiting various hues. The red matter was carefully examined by Mr. Birkett of Guy's, and Mr. Rainey of St. Thomas's Hospital, as well as by Mr. Simon of King's College.

The reader might here say that the reproducing of these cases, with some of their striking peculiarities, only shows their similarity to the case which is the occasion of this paper, and confirms the statement that the disease is not of frequent occurrence, and that but few instances are recorded.

But, upon a closer investigation of the first case, together with those condensed accounts which follow it, it will be seen that the disease has some common positive characters, and these may be stated in a general way in a few words.

Mollities ossium or osteo-malacia occurs in adult life, in persons previously healthy. It attacks the dense portions of the bone, before the spongy parts. It is attended by severe pain, which is often excruciating. Deformity suddenly occurs, of an angular character, by partial fracture or bending; and this deformity is never permanently removed. The general health fails; and though the appetite may continue, there is wasting and emaciation. No recoveries have taken place; death is certain. The *post-mortem* appearances show swelling of the bone and thickening of the periosteum. The middle part of the shaft, which is hard and laminated, is changed into spongy cancellated structure, which can be cut with a knife. The earthy matters of the bone are absorbed and the cells are filled with a semifluid, red, and oily substance. The bones become flexible in proportion to the degree of absorption of the earthy matter.

Although the account given above we believe to be a true and accurate description of the disease, we are bound, in view of the present literature of the subject, to present another side of the picture, and to state that not only very different but very opposite views are held as to the nature of mollities ossium, and that some of the distinguished modern writers upon pathology not only attach no faith to such an account as we have given, but equally discredit each other's views.

For instance, Rokitansky says:—

"It occurs chiefly in the bones of the trunk, and when the bones of the extremities are affected, they are so always in a subordinate degree. The deformities which result from mollities ossium are restricted to the trunk. The bones diminish in size."

Still more opposed to our views are Mr. Paget's statements, who, after examining numerous specimens in the Hunterian Museum, considers the disease essentially "fatty degeneration." He says:—

"Nothing can better express the character of the change than its similarity to fatty degeneration of other organs, in which we find the proper substances of the part gradually changed for fat, and the whole tissue spoiled, while the size and outer form of the part remain unaltered." And again, "These investigations were made in a collection containing specimens from nearly all the cases, with whose histories we are most familiar." In the second edition of Mr. Paget's valuable work, reference is made to three other cases subsequently reported, which confirm his view of fatty degeneration, and he says: "I have never seen a specimen *which appeared to fulfil in any degree the general notion of mollities ossium as a disease, consisting in the removal of the earthy matter of the bone, and the reduction of any part of the skeleton to its cartilaginous base.*" And again, after opposing Rokitsansky's generalization, that it occurs more frequently in *females*, and in the bones of the trunk, and that the bones are flexible and not brittle, he concluded by the following remarks: "I think we may consider that there are two diseases included under the name of mollities ossium, namely, fatty degeneration, which these specimens show, and which seems to be more frequent in England; and the simple softening of bone, or rickets of the adult, to which Rokitsansky's description alludes, and in which the bones are flexible rather than brittle, and appear reduced to a cartilaginous state." After reading such statements from such authorities, it is not surprising that Mr. Holmes, in the last edition of his valuable *System of Surgery*, should say, "the pathology of mollities is far from being satisfactorily established; and there can be little doubt that this has arisen, in a great part at any rate, from the fact that authors have confounded several different conditions under the same name. Some indeed make no distinction between mollities and fragilitas ossium, while others regard mollities as an affection allied to, if not identical with, rickets."

It would occupy more space than was intended, in giving the history of a case with a few remarks, if a contrast were now instituted between rickets and fragilitas ossium, and mollities, but it is proper to notice in passing, that rickets is a disease of childhood, occurring in those of originally defective and deficient health; that it is attended with but little pain, and that recovery is the rule. There is a deficiency of supply of the earthy material, and the bones, as they grow, become flexible, and are bent by the weight of the body as well as by muscular contraction. The bones of the lower extremities are bent, the spine twisted, and the pelvic arch falls in, and when adult life is attained, and ossification is completed, the results are bandy legs, sigmoid spine, and contracted pelves.¹

And, it might be said of fragilitas, that it is a mere symptom or result, and not truly a disease; that brittleness is a condition, dependent upon age, fatty degeneration, thinning of walls, cancer, atrophy, etc. But if we limit its meaning as is usually the case to that state which accompanies a tendency to frequency of fracture, which has been met with by almost every surgeon, and which was always supposed to be dependent upon a want of proper proportion between the animal and earthy matters of the bone, and of which so many cases are recorded in the text-books and

¹ See Dr. Parry's papers, Amer. Journ. Med. Sci., Jan. and April, 1872.

journals, it can be readily seen that neither rickets nor fragilitas correspond to the views which have been expressed upon mollities ossium. And in many of the text-books of the day, even in Mr. Erichsen's *Surgery*, mollities and fragilitas are described under one head, and Mr. Tyrrell's case, in which twenty-two fractures occurred, and also Mr. Arnott's case, in which there were thirty-one, are quoted in exemplification of the subject. Nor should these remarks be terminated without an allusion, at least, to some of the recent articles which have appeared in the journals bearing upon this subject.

Mr. Pedlar, L.R.P.C., has presented a very interesting paper (*West Riding Lunatic Asylum Reports*, vol. i. 1871), entitled "*Mollities Ossium and allied Diseases*," in which numerous cases are reported illustrative of the subject of "breaking of ribs in asylums," in which very remarkable statistics are brought forth, but we hardly think that the disease corresponds in its essentials to mollities. Dr. Geo. Warder, superintendent of the county asylum at Carmarthen, states (*Lond. Journ. Mental Science*, Jan. 1871) that of twenty bodies of patients dying in 1870, nine were found with bones in an "abnormal and diseased state." The manifestations of the disease were mostly in the ribs and sternum, and the bones were soft and easily broken down.

Dr. Ormerod's description of cases (Dr. Barnes's paper, *Obst. Trans.*, vol. xiii. 1871; also *Amer. Journ. Med. Sci.*, July 1872) leads us to suppose that he described some other disease than mollities.

And Dr. Casati, of the Royal School of Midwifery at Milan, records during a period of eight years "7719 deliveries, of whom sixty-two presented evidence of clearly marked osteo-malacia." Almost all of the cases came from one valley in which the people lived in damp houses, and were overworked and badly fed; forty-one of these cases had "deformed pelvis."

The most complete and perhaps the most instructive paper recently published on this subject is by Mr. Arthur E. Durham, *Guy's Hospital Reports*, 1864, 3d series, vol. x. He details three cases, the first of which presented in a marked way the characteristic symptoms of the disease.

Previously healthy woman, æt. 45, the mother of four healthy children. After her last confinement was seized with pain in her lower extremities, which became œdematous. The pain became so severe that she fainted in attempting to dress herself, and falling from the edge of the bed broke her right thigh and was sent to St. Bartholomew's Hospital, where she remained five months. No reparative action took place, and about a month afterwards, whilst her bedclothes were being changed by the nurse, the left femur gave way; she did not feel it crack, it seemed merely to bend. Deep-seated and aching pain attacked the other bones, one after another giving way, in each instance bending rather than breaking. She became much emaciated and deformed, and her sufferings were very acute. Her appetite was tolerably good. After a short time her decline became rapid, and she resembled a person in the last stage of hectic fever. At the *post-mortem* it was discovered that all the bones had undergone those changes which are characteristic of true mollities ossium.

They could without exception be cut by the knife, and for the most part with great ease. The shafts of long bones were affected to the greatest extent; and seemed to consist of a soft, greasy mass, not unlike liver in appearance, but more gelatinous in consistence, inclosed in a thickened and altered periosteum. The pelvis was not notably distorted, though its bones were softened.

Besides reporting these cases, Mr. Durham collects many others, and is able to add 14 to "Litzmann's 136, whose treatise on the subject is the most complete yet published with the exception perhaps of Beylard's."

Out of 145 patients, 13 only were males and 132 females; of the females, 91 were first affected during pregnancy or very shortly after childbirth.

There were only 10 cases affected under 20 years of age. The great majority began to suffer when between 25 and 33 years of age. In a majority of the cases not immediately connected with pregnancy or childbirth the symptoms first manifested themselves in the lower extremities. In a vast majority of the 91 cases described as commencing in connection with pregnancy, the first symptoms manifested themselves in or about the pelvis and lower part of the spine. In 73 of the cases the disease was absolutely confined to the bones of the trunk, and in a very great many cases there is no evidence of any other than the pelvic bones having been affected.

Mr. Durham raises the question as to how many of these last cases are to be regarded as examples of true mollities. And we certainly are disposed to agree with him that many of the cases which have been alluded to in the previous part of this paper as presenting obstetric difficulties should rather be considered as cases of deformed pelvis originating perhaps in some other disease. His views as to the relations of mollities to rickets and fragilitas are also decided. "Mollities ought never to have been confounded, as it has been and still appears to be in the minds of some, with rickets on the one hand, and senile fragility of the bones on the other. In rickets the primary cartilages have never become properly ossified. In senile fragility the animal matter of the bones appears to be absorbed as rapidly, if not more rapidly, than the earthy constituents, and none of the characteristic general symptoms of true mollities are present."

Without even alluding to other papers, such as Mr. Dalrymple's, in the *Dublin Journal*, vol. ii., in which microscopical and chemical investigations are detailed, we will conclude these remarks with a *resumé* from Rindfleisch, which freely confirms the views that have been expressed as to the nature of mollities.

He considers that its principal and almost only anatomical sign consists in an abstraction of lime and gradual liquefaction of the solid osseous tissue. If we break off one of the smallest of the osseous trabeculae from the cancellated structure and treat it with carmine and then examine it microscopically, it will have the appearance presented in Fig. 182 (Rindfleisch, *Pathological Anatomy*). This osseous trabecula consists of two kinds of substances; an exterior one lying next to the medullary spaces, and to the Haversian canals; and an inner

one which follows the axis of the osseous trabecula. The inner one contains a perfectly normal osseous tissue; the bone corpuscles with their numberless anastomosing processes, and the strangely refractive thoroughly colourless basis-substance, are intact. The outer one, on the other hand, shows us a minutely striated basis-substance, coloured deep by the carmine, which only here and there exhibits small shaded lines as the last remains of formerly existing bone-corpuscles. The change which we here see before us, reminds us too much of the known change which osseous tissue undergoes in removing the lime by means of hydrochloric acid, that we could for one moment doubt that here also a decalcification of the osseous tissue (halisteresis, Frey) had taken place. This decalcification progresses upon every osseous trabecula from without inwards; we may observe its progress at the time upon the sharp line which separates the decalcified osseous tissue from the normal. Herewith it is interesting to see that this line does not run parallel to the outer contour of the osseous trabecula, but in just such indented curves, such as we otherwise only perceive upon the line of resorption of the osseous tissue in inflammations, caries, etc. He advances the opinion that an acid, proceeding from the medullary spaces and the Haversian canals, robs the bone-tissue of its salts of lime. The decalcification is the first act of the bone softening. Some time afterward follows the second act, the dissolution of the decalcified bone-tissue. This also advances from the medullary spaces towards the axis of the osseous trabeculae. The latter for some time consist only of bone-cartilage, then they become more and more thin at the centre, finally melt down and disappear from view.

ART. IX.—*Cases Illustrating the Application of Elastic Ligatures in Surgery.* BY STUART ELDRIDGE, M.D., in charge of Imperial School of Medicine, Hakodate, Japan. (With a wood-cut.)

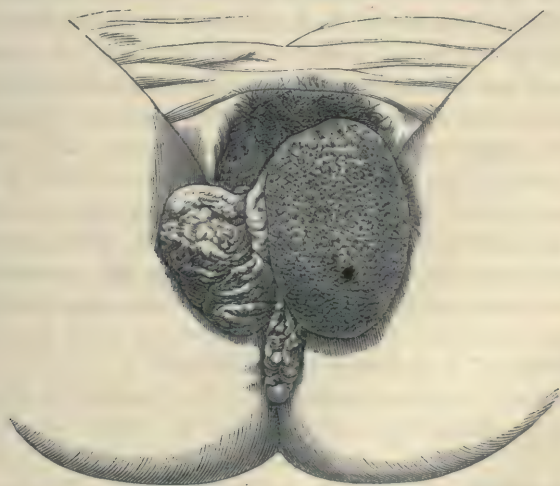
IN 1871 Mr. Henry Lee, of London, suggested that bands or cords of India-rubber might be advantageously substituted for the ordinary ligature in the strangulation of small tumours, and, more recently, Prof. Dittel, of Vienna, has independently arrived at the same conclusion while much extending the application of the idea. Prof. Dittel has operated, as our readers well know, by the rubber ligature for the removal of the testis and mamma, and has even amputated the thigh in this way, a proceeding in which he will probably be but seldom imitated.

During the year just past I have made much use of the elastic ligature for the removal of tumours, and in other cases in which gradual severance by ulceration was admissible, and with most gratifying results. I give below a few illustrative cases, premising that I have several times used the ligature in cases in which I should have preferred the knife, but in which the patients absolutely declined the more rapid operation.

1. *Vascular tumour of scalp.*—Kana Toshi, child, aged eight months. An angioma had existed upon the upper portion of the forehead since birth, and had rapidly enlarged, until, at the time I first saw the case, the tumour was larger than the half of a hen's egg, and of much the same shape; the skin very thin and vascular, not only over the tumour, but for

some distance around its base. Vaccination was tried, but with a negative result, so far as tumour was concerned, as might have been expected. June 10th, operated by rubber ligature. Two large hare-lip pins were first passed at right angles to each other, from side to side of the tumour, care being taken to pass the pins close to the pericranium so as to lie entirely below the diseased tissue. A very slight cut was then made in the skin below the pins around the base of the tumour, and into the groove thus made a thread of rubber was tightly tied. June 17th, the tumour had entirely separated save a central shred of tissue not more than one-tenth of an inch in diameter, which was cut off by the scissors. Cicatrization had so closely followed the rubber cord in its progress toward the centre that the space unhealed upon the removal of the strangulated mass was not more than one half the size of the base of the growth. July 30th, a firm, smooth, cicatrix three-quarters of an inch in diameter marks the former site of the tumour.

2. *Pedicellated fibrous tumours of external genitals.*—Sakura, prostitute, aged 20, syphilitic elephantiasis of labia majora and surrounding region. (See figure taken from a photograph.) These tumours were



exceedingly vascular, considering their fibrous character, and, as the patient entertained an invincible dread of the knife, it was resolved to remove them by ligature. July 20th slight cuts were made around the bases of the two larger tumours under local anæsthesia by carbolic acid, and small rubber bands shrunk into the grooves thus made. The base of the largest tumour was about four inches, that of the next in size about two inches in diameter. During the process of ulceration a dressing of carbolic acid solution was used to suppress fetor. July 27th. The smaller of the two tumours had separated to the normal diameter of the constricting band,

about three-eighths of an inch, and the remaining tissue was cut through with the scissors without loss of blood, the bloodvessels appearing to be sealed. July 30th. The larger tumour was found in similar condition, and its separation completed in like manner, again without hemorrhage.

The larger masses having been thus removed, several smaller tumours, of the size of a filbert to that of an almond, were strangulated by rubber thread, and in a few days dropped off. During the whole progress of the operation the patient suffered so little that her sleep was not interfered with, and it was almost impossible to prevent her running about the ward.

August 17th. Cicatrization was completed, and the cicatrices much smaller than the original cut surface. Patient discharged.

3. *Hæmorrhoids*.—K. J., male, aged 31, large external hæmorrhoids. December 14th, six ligatures of fine rubber thread were applied to as many tumours. The tumours being in a slightly inflamed condition, a line of strong carbolic acid was drawn around the base of each before the application of the ligature, though the usual incision of the skin was omitted. December 18th. The tumours have all dropped off. December 24th. Cicatrization has taken place, and the anus looks almost normal.

4. *Fistula in ano*.—G. J., male, aged 40. Fistula in ano extending from one inch above sphincter to a point two inches to left of anus; a second fistula of less extent existed on the right side. November 10th. Rubber thread was drawn through both fistulæ by means of an eyed probe, then tightly stretched and tied. The same day the patient, a sea-faring man, departed for Yokohama, but on his return, January 14th, informed me that on November 14th the ligature from the less extensive fistula came away, having entirely cut through, and, that three days later, that from the larger fistula, it also having finished its work. When I saw him on January 14th complete healing had taken place, and the action of the sphincter was normal, although, by the patient's own statement, he had been constantly on duty, and had paid but little attention to my directions as to the management of his bowels or of the wounds.

The foregoing are specimen cases only. I have operated on many others, more or less resembling those given, and, so far, always with satisfactory results.

There are undoubtedly many other circumstances in which the operation by rubber ligature will eventually be found useful. I believe it can be applied to the occlusion of arteries, perhaps even substituted for the clamp in ovariectomy, and, in a modified form, as a broad band with pad, to the cure of aneurism by distal compression.

The advantages of the rubber ligature in cases such as those detailed above, may be briefly summed up as follows:—

1. The operation is bloodless.
2. The ligature once applied requires little further attention, save in exceptional cases, but steadily cuts its way through till its elasticity is

exhausted. The pain and alarm produced by the necessarily often repeated tightening of the ordinary ligature has always formed a great objection to its use.

3. The liability to pyæmic infection would appear to be much less than in operations performed by ordinary ligature. Under the steady gentle pressure of the rubber the vessels are thoroughly occluded before being cut through by ulceration.

4. The elastic ligature is of a peculiarly non-absorbent and unirritating nature.

It should be remembered that fatty matters act upon India-rubber rather energetically, especially at the temperature of the body, so that in cases where the ligature must cut through any great depth of fatty tissue it is likely to break; but even should it do so, another can easily be substituted for the one broken. While I believe that, in all cases where gradual strangulation is indicated, the rubber ligature is to be preferred to the ordinary one of silk or other non-elastic material, I fully recognize the fact that it is open to many of the objections which have caused so many surgeons almost wholly to discard the operation by ligature in any form. I believe, however, that in at least three classes of cases, viz., vascular tumour, hæmorrhoids, and fistula in ano, it will be found the best method of operation. Further experience will show how much beyond this the use of elastic constriction may be advantageously extended.

ART. X.—*Report of Twenty Cases of Stricture of the Male Urethra, with Treatment.* By A. VANDERVEER, M.D., of Albany, N. Y. (With a wood-cut.)

THE following cases of stricture of the male urethra are presented to illustrate the treatment by gradual dilatation, by divulsion, and internal urethrotomy. They also illustrate the use of many of the more modern instruments now employed in the diagnosis and treatment of stricture.

CASE I. *Gradual dilatation; result good.*—May, 1867, C. W., unmarried, on account of intemperate habits for several years, applies for treatment. Six years ago contracted gonorrhœa; has had the disease, either in its acute or chronic stage, ever since; has practised the usual treatment with copaiba, cubebs, and various injections; noticed his stream of urine becoming small during the past three years, and now can only void it with much effort and straining; has a frequent desire to pass his urine during the night; no complete retention at any time, but fears it; desiring to be relieved, and leading a more temperate life, he is anxious for treatment; appears pale and thin, and states that he can attend to his duties only with the greatest effort. Upon examination a No. 3 black elastic olive-pointed bougie passes into the bladder. There is considerable gleetish dis-

charge, and the urethra is decidedly sensitive. Meatus appears quite small; tr. ferri chloridi and fluid extract ergot ordered internally. Continued this treatment for nearly eight months, besides passing bougies two or three times weekly, gradually increasing in size, until No. 15 could be introduced with ease. The discharge ceased entirely, and the patient was directed to use the bougie occasionally, and to continue in his good habits. His general health is now excellent, and in appearance he is decidedly improved.

CASE II. Single stricture; gradual dilatation; recovery.—May 14, 1870, E. T. J., æt. 43, of irregular and intemperate habits, applies for treatment to relieve a troublesome and long-standing stricture. First attack of gonorrhœa in 1848; several attacks since; has pursued the usual treatment with copaiba, etc., internally, and has frequently used injections. Eight years ago noticed that the stream of urine was growing smaller, and for the past five years has emptied his bladder with great difficulty; gleet discharge during most of this time. Two years ago, while in San Francisco, was treated by means of bougies, and experienced some relief, the discharge ceasing for over a year; but, neglecting treatment, soon relapsed into his former condition. During the past year is obliged to void his urine every hour or two both night and day, and for the past three months could only relieve himself when sitting upon the water-closet, when he would, also, each time, have a small fecal evacuation from the bowels. Is unable to attend to business; is pale, and feels weak and very despondent; habits are now better, and is very anxious for a restoration of his health. Urine is alkaline; specific gravity 1020, no albumen; has never had complete retention, always being able to empty his bladder by means of hip-baths, etc. Upon examining the urethra to-day a stricture is detected about five inches back of meatus, through which, by gentle exertion, and without causing much pain, a No. 2 black elastic olive-pointed bougie passes into the bladder, but cannot pass smallest size bulbous bougie. Ordered tr. ferri, tr. cantharid., and fld. extract ergot internally.

May 15. Voids his urine with more ease, and, seeing already some improvement, is hopeful.

Sept. 10. Gradual dilatation has been practised two and three times a week; the past four weeks not so often, until now No. 14 steel sound, English scale, can be passed with little pain into the bladder. Not obliged to void his urine during the night, and only three or four times during the day; the stream is full, and under observation is voided with marked force. The discharge, which was quite profuse when dilatation was first commenced, has never ceased entirely, and the patient has gained in flesh, health, and courage; internal treatment continued.

Dec. 1. A No. 15 steel sound has been introduced about once a week, until now No. 16 can be passed with comparative ease; general health good; internal treatment discontinued.

June 1, 1873. Mr. J. has returned every two or three months to have No. 15 or 16 steel sound passed; health is fully restored, and urinary tract apparently as well as ever; is himself taught and directed to pass a No. 15 steel sound once a month for a year at least, and after that not so often. There has been no chill, or any unpleasant symptoms in this case, although the patient is of a very nervous temperament.

Sept. 23. Patient has passed No. 15 steel sound once a month, and twice at my office I have passed No. 16; no unpleasant symptoms;

doing nicely; habits continue good. To-day, with bulbous bougie, cannot detect any contraction of urethral canal.

CASE III. Single stricture; gradual dilatation; recovery.—August 29, 1870. W. C., æt. 27; habits temperate; first attack of gonorrhœa 18 months ago. The attack was an aggravated one, and attended with much swelling of the penis; severe pain for many weeks in urinating; and a troublesome chordee. Had gone through the usual routine of internal treatment and injection; had taken good care of himself while under treatment. Now feels debilitated and despondent, and appears thin in flesh; frequent desire to micturate during the day and night; there is a gleety discharge present, and the stream voided is small. Upon examination with various bulbous-pointed bougies, a decided stricture is detected with a No. 2 in the membranous portion of the urethra; a No. 2 black elastic bougie passes into the bladder, but causes considerable pain. Ordered 10 μ tr. ferri with 8 μ tr. cantharid., diluted with water, four times daily, and gradual dilatation by means of elastic bougies.

Continued under treatment for six months; passed bougies two or three times a week, besides using for the last three months, after the urethra had become well dilated, a weak injection of either zinci sulph., cupri sulph., or tannin, with the syringe shown below. The long nozzle of this syringe was especially constructed for this case, and the use of the tannin has been attended with beneficial results in other cases of deep urethral inflammation.

Reversible flow.



The general health is much improved, and the discharge has now ceased entirely; not obliged to urinate during the night, and retains his urine for a longer time during the day. No. 17 steel sound is passed with ease to the patient; instructed to pass No. 14 metallic sound at least once every two weeks and to report.

Aug. 1, 1872. Has retained good health, and the urinary organs are in good condition; has continued to pass the sound once and twice a month for a year; comes occasionally to have No. 17 sound passed; has not passed the sound so frequently for the past twelve months; there is no contraction; reports himself well.

Aug. 2, 1873. W. C. came to-day to have his urethra examined. Passes a good stream, and reports himself as feeling well; no discharge; has not used the sound during the past year. Passed No. 17 steel sound with ease; ordered to pass No. 15 steel sound once a month, and to report occasionally. With No. 12 bulbous-pointed bougie cannot detect any contraction of the urethra.

CASE IV. Traumatic stricture; gradual dilatation; recovery.—May 5, 1871. Rev. W. E.; kicked by a horse twelve years ago, the force of the blow received on the perineum. Passed some blood with his urine shortly after the injury; no complete retention at any time, nor was a catheter introduced at the time of the injury. The swelling and ecchymosis never very severe, no abscess formed, the patient gradually recovered from the effects of the injury, and in five months after passed his urine in a full-

sized, natural stream, without pain or effort. During the subsequent five years he enjoyed good health, until after exposure to cold he had some difficulty in passing his urine; had well marked symptoms of cystitis, obliged to empty his bladder occasionally during the night, and was annoyed during the day by dysuria. The stream of urine gradually grew smaller, and it required a greater effort to empty the bladder. He has grown worse until now, when he is compelled to empty his bladder every hour or two during the day and night. The stream has grown very small, and frequently the urine is voided only in drops; has lost strength, is emaciated and much depressed in spirits, being obliged at times to give up his occupation in consequence of this trouble. Has been dosed "ad nauseam" with buchu and many other diuretics. Upon examination to-day the urethra is found to be very sensitive, and No. 3 bulbous pointed bougie is arrested in the bulbous part of the spongy portion of the urethra. No. 2 passes into the bladder, but is held firmly in attempting to withdraw it at the point of stricture. Large sized bulbous bougies pass easily through the portion of the urethra anterior to the stricture. Ordered internally tr. hyoseyamus, tr. cantharid., bicarb. potassa, and elix. cinchona, with good generous diet.

Gradual dilatation was practised for two months, when No. 13 steel sound could be passed with ease into the bladder. Patient was now relieved from passing the urine during the night, and could retain it for three or more hours during the day. Internal treatment discontinued, and patient taught and directed to pass No. 13 to No. 15 steel sound at least once a month.

CASE V. Two strictures; gradual dilatation; good results.—July 1, 1871. F. J., æt. 23, habits fair; small in stature. First attack of gonorrhœa two years ago. Had the usual treatment internally, and used injections for six months; when about well had an impure connection, and contracted the disease for a second time. This attack proved more severe than the first; was attended with much swelling of the penis and great dysuria, also had chordee; treatment about the same as during first attack. Has a continual gleetly discharge. Noticed about this time that the stream of urine was becoming smaller, with an increasing desire to micturate, frequently obliged to arise during the night to void his urine; has been in this state for six months previous to applying for treatment. Upon examining his urethra No. 5 bulbous bougie detects two well-marked strictures, one near the meatus, and the other in the membranous portion of the urethra. Tr. ferri and fld. ext. ergot prescribed internally. A No. 3 black elastic bougie passes into the bladder, but causes a smarting sensation at the points of stricture. Gradual dilatation was now practised two or three times a week. Continued under treatment six months. The stream now passed was full, the discharge had ceased, and he had no abnormal desire to micturate; No. 14 steel sound passed.

June 1, 1873. Has reported occasionally to have No. 14 steel sound passed; his general condition continues good.

CASE VI. Single stricture; gradual dilatation; recovery.—H. L., æt. 22, June 8, 1872, applied for relief of troublesome discharge from his penis. The discharge is accompanied by a frequent desire to micturate and a smarting sensation. Upon observation the stream of urine voided appears small, and requires considerable force. Is finely developed physically, and has not been subjected to exposure; habits temperate. Had his first attack of gonorrhœa in August, 1869; rather severe, from de-

scription of symptoms. The plan of treatment was with copaiba, etc., internally, until the middle of October, when, not improving as rapidly as he desired, he used, and but once, upon the advice of a friend, a strong injection of nitrate of silver. Four hours after, on attempting to micturate, found that his flow of urine had ceased, and for nearly twenty-four hours was unable to empty his bladder. This caused him great physical distress and uneasiness of mind. He was relieved at this time with some difficulty, and suffering great pain, by the introduction of a No. 8 gum-elastic catheter. After this he passed his urine naturally but in a small stream. From this time until February, 1870, he passed either No. 8 or 12 elastic bougie every other night. The discharge which was at first troubling him ceased, and passing, as he thought, a good stream, he stopped all treatment, having relied upon his own judgment as to treatment since using the injection of nitrate of silver in October, 1869.

From February, 1870, until the middle of last April he has been quite comfortable, at which time he noticed a return of the old gleet discharge, a gradual decrease in the size of the stream of urine voided, and increasing desire to micturate both night and day. Has had no exposure to a second attack of gonorrhœa. Upon examination to-day there was quite an abundant gleet discharge. Nos. 8 and 5 bulbous pointed bougies upon being introduced are successively arrested about six inches from the meatus. A No. 3 French olive-pointed black elastic bougie passes with slight effort into the bladder. Divulsion was proposed, but being decidedly opposed to the use of instruments, gradual dilatation was preferred. Ordered 10 m . tr. ferri after each meal; gr. j quinia every four hours.

Aug. 1. Have used bougies, gradually increasing in size, from two to three times a week, until now a No. 16 steel sound is introduced with comparative ease. Quinia was discontinued after two weeks and the iron a week ago; no chills. The discharge has now entirely ceased, and the general health is much improved. Is instructed to use the steel sound, and to pass No. 16 once a week. There is no vesical irritation; patient passes his urine as naturally as he ever has, and is not obliged to empty his bladder during the night.

March 1, 1873. Has returned to the office about every two months, and had No. 16 steel sound passed. Is free from any gleet discharge, and is feeling well.

June 3. No. 16 steel sound passes with ease into the bladder. Cautioned as to the necessity of passing the sound occasionally. Large size bulbous bougie fails to detect any contraction of the urethra.

July 29. Treatment continued, and condition remains good since last date, and gradual dilatation practised two and three times weekly. Discharge has ceased. Patient discharged, and ordered to introduce No. 15 steel sound at least once a month.

The following case of obstinate gleet is one of many met with in practice, and illustrates the folly of internal treatment in the giving of medicines, use of injections, etc., without some attempt being made in some way to restore the urethra to its normal calibre:—

CASE VII. *Obstinate gleet; single stricture; dilatation; recovery.*—September 22, 1872, D. P., æt. 27, habits temperate. First attack of gonorrhœa a year ago; not severe. Treated for six months with copaiba and injections; no treatment during the past six months. At present has an annoying discharge, especially in the morning. Exposure to cold increases

the desire to micturate; complains of an unpleasant sensation in the region of the prostate. Objects to having any instrument whatever introduced; desires to be treated only with medicines, and as he is anxious to be married, desires an immediate cure. Declined to treat the case at all unless he submits to an examination. Patient leaves in a rage.

October 20, 1872. Returns, stating that he has taken medicines without any effect upon the discharge; is willing to submit to any examination necessary. No. 5 bulbous pointed bougie detects a stricture in the membranous portion of the urethra. Gradual dilatation was begun, and tr. ferri, cantharid., and fl. ext. ergot given internally.

February 1, 1873. Patient has continued under treatment, gradual dilatation being practised twice a week until now. No. 17 steel sound can be passed with ease. No discharge. Departs cured, with the expression that the next time he will believe the doctor.

CASE VIII. Single stricture; divulsion; recovery.—May 31, 1871, C. J., æt. 27, intemperate, admitted to hospital to-day. First attack of gonorrhœa three years ago; made a speedy recovery by internal use of copaiba, etc.; no injections used. Second attack a year and a half after; treated for six months with internal remedies and injections; at this time there was scarcely any discharge, but did not consider himself well. Soon after this, the gleet discharge still continuing, he noticed that his stream of urine was gradually becoming smaller, the smarting pain upon passing it more marked, that it took longer to empty his bladder, and was obliged to micturate frequently both day and night. This has been the condition of the patient for the past year. During the last two months is obliged to go to the water-closet nearly every time he desires to micturate; passes upon observation no distinct stream at present. His urethra presents a congenital hypospadias, about quarter of an inch of the urethral canal being absent at the meatus. Upon examining his urethra with different sized bulbous-pointed bougies, the smallest will not pass a stricture situated in the membranous portion. After injecting the urethra with warm oil, an attempt was made to pass a whalebone guide; although persevering for several hours for three successive days, none could be introduced into the bladder.

Patient took at this time internally tr. ferri and sulph. quiniæ, and flax-seed poultices were applied to hypogastric region. Keeps his bladder empty by frequent attempts to urinate. Had concluded to perform external perineal urethrotomy, but succeeded on the fourth day in a half hour's time, and after using eight guides, in introducing one past the stricture. On this, with some effort, a No. 2 tunnelled silver catheter drawing off about a gill of ammoniacal urine. Gouley's modification of Thompson's divulsor was now passed on the guide, and the stricture apparently fully divulsed; about two drachms of blood followed the operation; suffered but little pain.

Nos. 8 and 10 steel sounds now passed with ease. Patient ordered to continue iron and quinia. No chill or unpleasant symptom following, steel sounds to No. 15 were passed with little pain. Patient discharged from hospital June 15, 1871, with instructions to have No. 15 steel sound passed occasionally.

June 1, 1873. Two years after divulsion. C. J. has reported about every two or three months; have passed each time Nos. 15 and 16 steel sound without any difficulty. Has married since the operation, and become a father. General condition good.

CASE IX. *Relapse in five years after gradual dilatation; divulsion; use of meatotome; recovery.*—December 13, 1872, C. W. (Case I) again applied for treatment concerning his former trouble. Habits have been good since last under treatment, and has married. Had employed the bougie for nearly six months, when, feeling perfectly well, he discontinued its use. During the past few months has had a more frequent desire to pass his urine; has noticed a slight gleet discharge, and also that the stream of urine is smaller. On examining his urethra with a No. 3 bulbous-pointed bougie, a stricture is detected five inches from the meatus, which holds the bougie quite firmly on attempting to withdraw it. Gradual dilatation now employed for six weeks, but No. 10 black elastic bougie gives so much pain at the meatus that I determined to incise it, and attempt divulsion upon the deeper stricture.

Feb. 1, 1873. The meatus was freely incised with Gouley's meatotome, and a No. 14 steel sound passed down to the deeper stricture; no unpleasant symptoms ensued.

17th. Having first introduced the whalebone guide with Gouley's modification of Thompson's divulsor, the deeper stricture was fully divulsed; slight bleeding; the operation giving him no more pain than the bougie while practising gradual dilatation. No. 14 steel sound was passed into the bladder. Iron and quinia were prescribed during a week, and no unpleasant symptoms presented. Twice a week, for ten weeks, steel sounds up to No 15 were introduced, at which time the discharge ceased, and he was discharged, with instructions to pass the No. 15 steel sound twice a month.

Oct. 1. C. W. has continued to use No. 15 steel sound weekly, feeling well and passing his urine with ease and as naturally as he ever did.

CASE X. *Single stricture; divulsion; recovery.*—May 23, 1872, W. J., æt. 34, temperate. Had first attack of gonorrhœa in May, 1865. Made an easy recovery in two months with the usual treatment without injections. In the early part of 1868 had a second attack, symptoms not more severe than the first. Used the same treatment for a year, but still had a constant gleet discharge. At this time was advised to use a strong injection of sulphate of copper, which caused him great pain, and resulted in almost complete retention. Has since abandoned all treatment; has had great difficulty in urinating, and can now pass but a small stream, and at times but a succession of drops. Obligated to micturate frequently during the night, and is frequently unable to perform the act without being seated upon the water-closet, and often has a passage from the bowels at the same time. Is at present thin and emaciated. Upon examining his urethra to-day with a bulbous bougie a stricture is found in the membranous portion, through which only a whalebone guide can be passed, and only after a half hour's steady perseverance, using six guides. No. 2 tunnelled steel sound was first passed on the whalebone guide, then the tunnelled divulsor and the stricture fully divulsed, with little pain and slight hemorrhage. No. 12 steel sound was now passed into the bladder. Ordered quinia and tr. ferri.

June 1. No unpleasant symptoms have followed. A No. 15 steel sound has been passed daily without great pain. Not obliged to empty his bladder during the night; is much improved; treatment to be continued.

Aug. 10. Patient has reported every two weeks, and had Nos. 15 and 16 steel sound passed. Condition is very much better. Internal treatment discontinued. Ordered to pass sound occasionally.

Oct. 30, 1873. W. J. has not reported since last note of case until to-

day. No sound used since Aug. 10, 1872. Passes a good stream. No. 16 steel sound passes with little pain into the bladder. Bulbous bougie fails to detect any remains of stricture.

CASE XI. *Single stricture; divulsion; recovery.*—H. J., æt. 45; hotel keeper, of intemperate habits. First attack of gonorrhœa in 1848, said to have been complicated with chancre in urethra. Treated with mild injections. Symptoms subsided in six to eight weeks. No difficulty in passing his urine after this attack. Second attack in 1861, which readily yielded to treatment in four or five weeks. No trouble in voiding urine after this—passing a good stream. Had a third attack in March, 1868, which proved to be more severe, the discharge making its appearance freely forty-eight hours after exposure. Treated as before with injection, etc.; had a severe attack of orchitis when partially cured. Had from the beginning difficulty in voiding his urine, while he noticed with anxiety that the stream was gradually growing smaller. After eight weeks' treatment he thought the discharge had entirely ceased, but since has had great difficulty in voiding his urine. Obligated to frequently void his urine drop by drop, both day and night. Sometimes would consume fifteen minutes in emptying his bladder, and at times obliged to assume almost every possible position to effect it.

November 30, 1872. Upon examination to-day a stricture is detected five inches back from the glans penis or meatus. After using several whalebone guides, one passed the stricture with slight effort, and entered the bladder. Upon this No. 2 tunnelled sound, then Gouley's No. 3 tunnelled silver catheter was passed, and through the latter the urine now flowed freely. Thompson's tunnelled divulsor was then introduced, and the stricture freely divulsed; pain not severe; slight hemorrhage. Immediately after No. 15 steel sound was passed; patient complaining of very little pain. Ordered internally 1 gr. quinia every three hours, and 10 m. tr. ferri three times daily. This treatment was continued for a week, no chill or unpleasant symptom following. Nos. 15 and 16 steel sound were passed every other night. After this No. 16 sound was passed weekly for a month. Internal treatment now discontinued, and patient warned of the necessity of having sound passed occasionally. Has, however, not since reported.

CASE XII. *Traumatic stricture; partial divulsion; urethral fever; gradual dilatation; recovery.*—May 11, 1872. McC. E., æt. 24; unmarried; temperate habits. While following his daily occupation—paper hanger—fell astride of a step-ladder, and received a severe contusion on the perineum. States that he did not void his urine nor pass blood after the fall, but that the urine was drawn on the 12th, 13th, and 14th, and noticed an escape of blood after the use of the catheter. After the 14th, he passed his urine with the aid of warm hip-baths and anodynes, until July 20th, when he could only void it in drops. Has a constant desire to micturate, and can only do so with great effort when seated upon a vessel. At this time I was called to see him in consultation with his attending physician, Dr. Maguire. Upon examination with a bulbous-pointed bougie, it was arrested in the membranous portion of the urethra, and after injecting the canal with warm oil, no ordinary instrument would pass the point of stricture. After an hour's effort with whalebone guides, one was finally passed into the bladder, upon this No. 2 tunnelled sound, and then Thompson's divulsor; the latter causing such great pain and distress the divulsion was not completed. After this, however, the urine

passed more freely, but the imperfect divulsion was followed by severe urethral fever, which did not yield for several days to the use of quinia in large doses, tr. aconite, anodynes, external application of heat, etc., etc.

July 25. The urethral fever has subsided and only No. 7 steel sound can be introduced with gentleness into the bladder, causing little or no pain. No great pain following the use of the steel sound, gradual dilatation was practised up to September 1, 1872, when No. 18 steel sound could be passed into the bladder with very little pain. No. 17 and 18 steel sounds were now passed once a month.

September 10, 1873. Patient, at request of Dr. M., reported to-day, and No. 18 steel sound can be passed with ease. Condition good. No vesical irritation. Directed to use No. 17 steel sound once every month or two.

CASE XIII. *Two strictures; use of meatotome; dilatation; divulsion; partial recovery.*—S. C., æt. 26, unmarried; habits temperate. July 10, 1872. The patient presents himself to-day with the following history. It is here given verbatim: "First noticed a slight discharge from the penis on the evening of the 27th of June, 1871, having on the 24th previous been in a drenching storm all day and thoroughly wet through; took sandalwood oil without any perceptible effect for three weeks; then took cubebs and copaiba paste for about a month; neither a diminution nor increase of the discharge; consulted a physician who gave me uva ursi and an injection of sulphate of zinc. Up to this time, about two months having elapsed, had no trouble in urinating, there appearing to be no inflammation, no chordee, nothing but the simple discharge. After using the injection a short time, the penis began to swell, the discharge became copious, and micturition very painful. This state of things lasted for a great while, during which time I had used several different injections and a variety of prescriptions. But finding no benefit I stopped taking medicines, and simply used a wash of sal soda, by which I succeeded in keeping the parts perfectly clean and in reducing the inflammation. Then took cannabis and cantharides—homœopathically—but without any apparent benefit."

Upon examining the urethra with a No. 3 bulbous-pointed bougie, a stricture is detected just behind the meatus, and another in the membranous portion of the urethra. There is a free gleet discharge, with a constant desire to micturate. The stream of urine has gradually decreased in size, and it requires great effort on the part of the patient to empty his bladder. The stricture behind the meatus was incised with a common bistoury, and Nos. 10 and 12 elastic bougies passed down to the deeper one. Slight hemorrhage. Directed to use No. 12 bougie, and to introduce it for two inches; but the discharge ceasing, he neglected himself and applied for no further treatment until August 24, 1873. The stream of urine was decidedly small, and the desire to micturate frequent. Obligated to empty his bladder frequently during the night. No. 2 bulbous-pointed bougie will hardly pass the stricture back of the meatus, but passes the deeper stricture with ease. The stricture near the meatus was now freely incised with the meatotome; hemorrhage profuse and arrested with some difficulty. No. 14 steel sound passes down to the deeper stricture. Sound passed for four successive days, and at each time the hemorrhage was quite annoying.

August 29. Being exposed to a cold rain, the patient had severe chills followed by diarrhœa and exacerbations of fever for nearly a week. Urine scanty, and micturition attended with much pain in lumbar and hypo-

gastric regions. Iron and quinia ordered internally, with heat, etc., to be applied externally. No sound having been passed during the illness of the patient, the stricture back of the meatus had again somewhat contracted.

September 7. Patient being in good condition, a whalebone guide was passed with little effort through the deeper stricture into the bladder, on this No. 2 tunnelled sound, then No. 3 tunnelled silver catheter, and about a gill of urine withdrawn. After this, Gouley's modification of Thompson's divulsor was introduced, and the stricture in the membranous portion of urethra thoroughly divulsed, attended with much pain and some hemorrhage. No. 10 steel sound was now readily passed into the bladder. Quinia and iron ordered to be continued. No unpleasant symptoms followed.

19th. Gradual dilatation having been practised daily, and No. 13 steel sound scarcely passing the meatus, the latter is again freely incised with the meatotome. Hemorrhage considerable. Nos. 15 and 16 steel sound passed for a short distance.

October 1. Patient's condition good, except sensitiveness of the urethra near the deeper stricture. The passage of a larger than No. 10 steel sound causes much pain and distress at this point. Directed to continue the use of tr. ferri with mucilaginous drinks.

November 1, 1873. Gradual dilatation has been continued until now. No. 13 steel sound is passed with comparative ease. Ordered to continue treatment.

CASE XIV. *Three strictures; divulsion; gradual dilatation; use of meatotome, and Gouley's dilating urethrotome; recovery.*—C. T. A., sent from Bennington, Vt., for treatment; æt. 30; of intemperate and irregular habits; saloon keeper. Two years ago had first attack of gonorrhœa, very severe in character, and attended with chordee and painful micturition. Considerable time elapsed before the symptoms subsided, and has not been free from a gleet discharge since. Injections were used with bal. copaiba, etc., internally for some time. A year ago had second attack of gonorrhœa, for which the usual treatment was pursued for three months without injections. Gleet discharge has continued. Six months ago, after an impure connection, noticed a chancre on the outer surface of the glans penis, which yielded readily to treatment; very little internal treatment. During last three months has voided his urine with some difficulty, having also a frequent desire to micturate, and requiring a long time to empty the bladder. The stream of urine has become gradually smaller, until at times it could only be passed in drops. Is obliged to empty his bladder frequently during the night. For the past year has himself occasionally passed a No. 5 English bougie; has not made use of it during the past six weeks, being unable to introduce it for any distance into the urethra.

March 20, 1873. Applies to-day for treatment, fearing that if he is not soon relieved, he will be altogether unable to void his urine. His mouth, upon examination, presents several mucous patches, and there are patches and condylomata about the anus. Upon examining the urethra with a No. 6 bulbous-pointed bougie a stricture is detected just back of the meatus; it is also arrested at a point $5\frac{1}{2}$ inches from the meatus. No. 3 will not pass this point. After some effort with eight whalebone guides, one is finally passed into the bladder, upon which a No. 2 tunnelled sound was guided with little effort, and attended with no pain. A No. 3 tunnelled

catheter was now passed, and a small quantity of urine was withdrawn, showing that the instrument had passed into the bladder. The patient being unable to leave his business, and wishing to return home the next day, I determined not to operate on the stricture near the meatus at present, but to use the divulsor on the deeper one. The instrument was passed easily on the guide, and the stricture was divulsed until the index marked No. 12, when, there being much pain, I desisted, about half a drachm of blood following the operation. Ordered to take 1 gr. quinia every three hours, and report in the morning.

21st. Called this morning, stating that he had not passed so comfortable a night for a long time. Passes, he says, a good stream; no chill or fever. A No. 9 Thompson's steel sound was now passed with ease and little pain. Ordered to drink flaxseed tea, continue quinia, to keep quiet, and to remain in the city for another day at least.

22d. No chill or fever. The introduction of No. 9 steel sound is attended with little pain. Complains of considerable pain near meatus when attempting to introduce No. 10. Being anxious to return home, he is ordered the same treatment as before, and in addition a gargle of potass. chlor. and ammon. mur. for his throat, and to return in three days.

26th. Is feeling much better; no chill or fever; passes his urine less frequently and better than for a year past. No. 9 steel sound is introduced with ease. I now wished to incise the stricture near the meatus, but the patient being obliged to return home desired me to wait for a few days longer. Same treatment to be continued.

31st. States that his throat and anus are troubling him, but feels much improved as regards his urinary difficulty. The stricture near the meatus was now incised with the meatotome, and a No. 11 steel sound passed with little pain into the bladder. Very little hemorrhage. Ordered to introduce night and morning a No. 12 elastic bougie an inch into the urethra, so as to prevent contraction of the stricture near the meatus. Ordered to take, two or three times daily, a pill of the following: R. Hydrarg. chlor. corrosiv. gr. $\frac{1}{8}$; extract hyoseyam., extract gentian., aa gr. j; ferri chlorid. gr. $\frac{1}{4}$, M.; and ung. hydrarg. ammoniat. to be applied to the anus two or three times daily. Also to continue gargle for throat. Ordered to report in a few days.

April 5. No chill or fever; progressing finely; feels much improved in every respect; obliged to urinate but once or twice during the night. No. 13 steel sound passes with little difficulty. To continue treatment and report in a week.

12th. Secondary symptoms improved; sleeps well during the whole night, and states that he is passing his urine as well as ever. Nos. 13 and 14 steel sounds pass with ease, but No. 15 causes much pain about two inches back from the meatus, and at the meatus itself. With a No. 10 bulbous pointed bougie a well-defined stricture is detected two and a half inches from the meatus. This stricture is to be incised with Gouley's urethrotome. To continue treatment.

24th. Has not reported on account of marked improvement. Same instruments as were used on the 12th, now introduced with ease; condition good. Wishing to return, he is instructed to use No. 14 steel sound and to pass it every four days, and to report in two weeks. To continue treatment for secondary symptoms.

May 10. Has used No. 14 sound without difficulty, and is much improved in health, secondary symptoms having subsided very decidedly.

No. 15 steel sound causing much pain at the meatus when introduced, the latter was again freely incised with the urethrotome, when Nos. 15 and 16 were passed, but causing much pain at the stricture, two and a half inches back, ordered to use large bougie, and keep the meatus well opened.

15th. No. 15 steel sound is introduced without difficulty. Wishing to return, he is ordered to use No. 15 twice a week, and to await results before treating the stricture two and a half inches back.

August 1. The stricture two and a half inches back from the meatus was freely incised with Gouley's dilating urethrotome, and No. 16 steel sound passed into the bladder with ease; very little hemorrhage followed. General health very much improved; directed to use No. 15 Thompson's sound every two weeks. The throat symptoms becoming troublesome, he is directed to take three of the pills prescribed before daily.

September 1. Mr. A. reports himself as doing well; passes Nos. 15 and 16 steel sound without difficulty. Urinates as when in perfect health. Continued treatment.

CASE XV. *Abscess and vesical fistula in perineum, also fistula in ano; two strictures; gradual dilatation and use of Vollemier's divulsor; good result.*—Service of Dr. J. H. Armsby. October 28, 1871, McC. D., æt. 24, pale, emaciated, admitted to hospital to-day. Has had several attacks of gonorrhœa; treated internally, and also used injections, etc. Upon examination a fistulous opening is discovered on the left side, and in front of the anus, connecting with the bowel and also the urethra. There is continual discharge of fecal matter and gas, and also of urine when he attempts to urinate. Quinia and tr. ferri ordered internally with generous diet; passes a moderate sized stream of urine, but with difficulty.

November 20, 1871. This condition having improved, the fistula in ano was operated on in the usual manner. Twelve to fourteen hours after the operation an alarming hemorrhage set in, and was finally controlled with the greatest difficulty by means of liq. ferri subsulph. and compressed sponge. Although considerably weakened by the hemorrhage, the operation proved successful as regards the fistula in ano. The fistulous connection with the urethra still remained open, and urine escaped whenever an attempt was made to empty the bladder.

January 1, 1872. Service of Dr. Vanderveer; McC. D. is still in bed, but improving slowly.

20th. Having had some trouble in voiding his urine, a careful examination was made which revealed two strictures in spongy portion, one two inches, the other four inches from the meatus. After some effort a small whalebone guide was passed into the bladder, and on this Gouley's No. 3 tunnelled silver catheter; about a pint of urine was withdrawn. On account of the great pain attending the operation he was anæsthetized. This exhausting him very rapidly, the catheter only was passed. By aid of a No. 3 elastic bougie urine was passed much more easily, and with more freedom than for a year past; several chills and a sharp urethral fever followed the operation. Being in a weak condition, the iron and quinia were continued, and further operative proceeding abandoned for the time being.

March 1. Patient is improving and is about the ward. Dr. Swinburne, while in temporary charge, during illness of Dr. Vanderveer, finding the patient in good condition, after having chloroformed him, passed Vollemier's divulsor and ruptured both strictures; considerable hemorrhage

following, but no other unpleasant symptoms. Nos. 8 and 10 steel sounds were now passed with ease. Patient was directed to pass No. 10 steel sound. The fistula in the perineum connecting with the urethra is now entirely healed. Discharged from the hospital June 1, 1872. Patient not heard from since.

CASE XVI. *Two strictures; use of meatotome and urethrotome; urethral fever; recovery.* Reported by Dr. Whitehorn, house physician, July 25, 1873.—R. W., Greenville, Greene Co., N. Y., æt. 28, strong and robust constitution; admitted to hospital as a private patient. Contracted gonorrhœa four and one half years ago, for which he consulted no physician until it had become a chronic gleet. Eight months after thought he had recovered, when after an occasional spree, he noticed a discharge which continued for a week at a time; was in this condition for a year, when he sought medical advice. Bougies were used, the discharge ceased, and he micturated freely again for six months. About this time drinking freely of cider, the discharge again appeared. There was also renewed dysuria. Took bal. copaib. and spts. æth. nitros., with some relief. Up to four months ago his condition became more and more aggravated, when he could only pass his urine by drops, and with more comfort when seated upon a bench than otherwise. This condition was alike at all times, being obliged to micturate every few minutes, else the urine dribbled away; had sharp momentary pain in inguinal region when nearly through micturating. Upon examination to-day (July 25, 1873) a slight stricture is detected half a inch back of the meatus, and another in the spongy portion of the urethra, through which No. 3 bulbous-pointed bougie will not pass. Urine of a pale colour, slightly acid; no albumen. Ordered, R. pulv. Tully grs. v, every two hours. R. tr. ferri chlorid. ℥x, three times daily. R. inf. ulmi, as a drink ad libit.

26th. Bowels moved freely; feels somewhat better; slept fairly; with some trouble a whalebone guide is introduced, on this No. 2 tunnelled sound, then No. 3 tunnelled silver catheter, after which the urine was voided with comparative ease.

27th. Slept well; urinated freely throughout the day; appetite improving.

28th. Condition as yesterday; this P. M. divided first stricture with the meatotome; operation almost painless; now passed No. 14 steel sound through and as far as second stricture; very little hemorrhage.

29th. Improving; during the forenoon introduced No. 16 sound through divided stricture; attended with considerable pain and hemorrhage; no other unfavourable symptoms.

30th. Nos. 14 and 16 sounds were introduced down to second stricture with but little pain and hemorrhage.

31st. Doing well.

August 1. Condition good; at 12 M. introduced Gouley's urethrotome upon guide, and divided second stricture from before backward on floor of the urethra. Passed No. 10 sound into the bladder, attended with very little pain and hemorrhage. At 3 P. M., patient was seized with rigors; applied hot water to feet and extra blankets ordered; relieved in about five minutes; pulse 90, soft and full; skin warm and moist; countenance anxious. Shortly afterwards, attempting to use the commode contrary to orders, he suddenly became faint and much prostrated; pulse 100, soft and full; profuse perspiration; face wan and anxious; respiration sighing; voice weak; stimulants administered cautiously. Shortly afterwards again seized

with rigors; applied heat to feet and spine, sinapism to epigastrium (to relieve nausea). Gradual improvement; 9 P. M. temp. 103° ; pulse 98 to 104; skin moist. Ordered R. quiniæ sulph. grs. iij, every two hours. R. infus. lini sem. for a drink ad libit. To continue the iron; hot hop pillows applied to lumbar region; large flaxseed poultice over abdomen.

2d. 8. A. M., passed a sleepless but comfortable night until 3 A. M., when he had a slight chill, lasting but a few minutes; usual treatment; micturated once during the night, passing about 8 oz. of urine; pulse 80; temp. 99° ; countenance cheerful and light; no sound used. 3 P. M., was again seized with rigors for a few minutes, followed by profuse perspiration; pulse 84; temp. 102° . 9 P. M., pulse 74; temp. $99\frac{1}{3}^{\circ}$; usual treatment.

3d. 8 A. M., pulse 74; temp. 99° ; doing well. 3.15 P. M., had a chill lasting fifteen minutes; great prostration; pulse 96; temp. $103\frac{2}{3}^{\circ}$. 9 P. M., pulse 74; temp. $103\frac{1}{3}^{\circ}$; skin warm and moist; usual treatment combined with quinia; hot hop pillows and poultices were applied.

4th. 8 A. M., pulse 74; temp. 99° ; passed a comfortable night under influence of Tully powder. R. pil. quiniæ sulph. gr. j, five every two hours up to 6 P. M. 3 P. M., though no unfavourable symptoms manifested themselves, ordered hot applications as a preventive to chill. 9 P. M., pulse 98. Free secretion of urine; passed No. 8 steel sound.

5th. 9 A. M., pulse 66, regular and strong; tongue furred; slept well; skin moist and warm. 9 P. M., pulse 54; temp. 96° ; appetite good, and sleeps occasionally. From 8 A. M. to 6 P. M., took 5 grs. quinia every two hours, using at the same time hot applications as before; now decreased the quinia to grs. iij, every two hours.

6th. 9 A. M., pulse 75; temp. 97° ; slept well; appetite good; bowels regular. 9 P. M., pulse 68; temp. $97\frac{1}{3}^{\circ}$; passed No. 10 sound.

7th. 9 A. M., pulse 69; temp. 98° ; doing well.

8th. 9 A. M., pulse 70; temp. 97° ; doing well. At 4 P. M., introduced Nos. 10 and 12 steel sounds without trouble. At 6 P. M., had a slight chill; pulse 102; temp. 100° . Continued usual treatment, and gave R. tr. aconiti. rad. gtt. ij every two hours. 11 P. M., feeling much better.

9th. 9 A. M., slept well; pulse 72; temp. 98° . From this time until his discharge, August 11th, his progress towards recovery was uninterrupted. He had 10 m tr. ferri three times daily and one grain of quinia every three hours. The urethra admitted the easy passage of No. 16 Thompson's sound.

October 1. R. W. has reported every two weeks, and No. 16 Thompson's sound was passed. Is improving in general health and strength. Is given No. 16 black elastic bougie, and directed to pass it himself once a week. Has continued the use of the iron and quinia since leaving the hospital, 10 drops of the former, and three grains of the latter three times a day.

CASE XVII. *Gradual dilatation; use of urethrotome; stricture of large calibre and use of Gouley's dilating urethrotome; recovery.*—December 10, 1872, D. C. M. A., æt. 35; health good; habits temperate. Had a severe attack of gonorrhœa five years ago; treated with copaiba internally and injections; has had a slight gleet discharge since. Two years ago had cystitis, and since then complains of much pain, and a sensation of heat in the region of the prostate gland. There has been a frequent desire to micturate, and obliged to arise two or three times during the night to empty his bladder. Has also noticed during the past six months

that the stream of urine has become quite small. Upon examination with a No. 5 bulbous-pointed bougie, a stricture is detected one-quarter inch back from meatus, and another in the membranous portion of the urethra. Ordered tr. ferri and fluid extract ergot internally. Gradual dilatation was practised upon the deeper stricture two and three times a week until March 1st. The strictures being very unyielding and the introduction of No. 10 steel sound causing great pain at the meatus, the latter, including the first stricture, were freely incised with the meatotome; the patient desiring not to have divulsion performed upon the deeper stricture. No. 14 steel sound passed down to the deeper stricture. No unpleasant symptom followed. The use of the meatotome caused much less pain than the bougie or sound while practising gradual dilatation. The deeper stricture was now gradually dilated.

May 1. On passing No. 15 steel sound there is great pain at the meatus, which had somewhat contracted; this was again incised, with no unpleasant symptom following. The discharge has now ceased; micturates freely and with ease; reports himself as feeling very well; internal treatment discontinued.

July 1, 1873. No. 16 steel sound has been passed once a week; patient improving; instructed to use a No. 12 elastic bougie once a week, and to report occasionally.

August 1. S. returns reporting that for the past two weeks has noticed occasionally in the morning a moisture about the meatus, and that it annoys him; notices also after urinating, when he believes the act completed, an escape of several drops of urine. Upon examining his urethra carefully with a No. 11 bulbous-pointed bougie, a stricture of large calibre is detected three inches from the meatus. Gouley's dilating urethrotome was then introduced, the stricture well dilated and incised; considerable hemorrhage followed and continued for nearly two days. No. 17 steel sound was now introduced with no unpleasant symptom following; no stricture can be detected at present.

September 1. Nos. 16 and 17 steel sounds have been passed weekly; noticed no moisture of the lips in the morning, and no dribbling of urine after emptying his bladder.

25th. Patient continues well; passing No. 16. steel sound about once a week.

CASE XVIII. *Five strictures; gradual dilatation; use of meatotome; partial recovery; patient to return for further treatment.*—September 2, 1873. McG. J. F., æt. 45; habits temperate; first attack of gonorrhœa in 1868; was very severe in character and attended with much swelling of penis; painful chordee and a very profuse discharge; treated with little benefit for nearly a year with copaiba, etc. During most of this time the discharge continued, attended with much pain and scalding, and a frequent desire to micturate. He finally refused any further treatment, and after a short time found himself somewhat improved. During 1870, notwithstanding a constant gleet discharge, he was quite comfortable, not being obliged to pass his urine so often, and effecting it with comparative ease. During the early part of 1871 he was kicked by a horse, receiving the force of the blow in the testicles and penis. These organs swelled very rapidly, became very ecchymotic, and patient was confined to his bed in consequence during several weeks. Passed frequently small quantities of urine mixed with blood; no complete retention; six months after recovering from the injury he had sufficiently recovered to again attend to his duties.

He now noticed that the stream of urine was smaller than usual, but could always empty his bladder; obliged to micturate frequently during the night. In November, 1872, while riding a vicious horse he was thrown against the horn of the saddle and injured his penis and testicle for a second time. The swelling and ecchymosis were as great as when first injured; greater dysuria; and attended with hæmaturia; confined to the house during two weeks. From this time until September 2, 1873, he has gradually grown worse, voiding his urine from twenty-five to thirty times a day, and very often during the night, always attended with excruciating pain. It takes him from five to ten minutes each time to empty his bladder. To-day he presents himself for treatment; is much emaciated and depressed in spirits; has tried all the different "pathies," and has very little faith in any treatment. Upon examination the under surface of the urethra feels roughened and indurated, and there is found in the perineum a swelling about the size of a hen's egg. The latter has developed itself gradually during the past three weeks, and he is certain that it grows larger when attempting to urinate, and decreases in size after emptying his bladder; the swelling is hard to the touch; very painful, and especially so on attempting to urinate.

Upon attempting to explore the urethra, after injecting the same with warm oil, the smallest bulbous-pointed bougie is arrested about two inches from the meatus, and detects two well-defined strictures at this point, beyond which it will not pass. After some effort and the use of five whale-bone guides, one is finally passed into the bladder; on this a No. 2 tunnelled sound, and then, although attended with great pain, Gouley's No. 3 tunnelled silver catheter, through which about two ounces of very offensive urine passed; some hemorrhage followed. No. 3 bulbous-pointed bougie now detects four well-defined strictures in the spongy portion of the urethra, one near the meatus, and the others about three-quarters of an inch apart. The same bougie also detects a stricture in membranous part of urethra, passing it and entering the bladder, causing great pain all along the urethra, and eliciting from him the remark that he would have to be anæsthetized if the operation was to be repeated; ordered rest, *tr. ferri et quiniæ sulph.* internally, and the application of linseed meal poultices to the perineum and hypogastric regions.

September 4. No chill; passes his urine with more ease and less frequently; feels encouraged; internal treatment continued. No. 3 black elastic bougie passes with ease, and little complaint on part of patient.

October 15. Has continued the iron and quinia; improved in appearance; has gained strength and appetite, and is very much encouraged; elastic bougies have been passed every day or two, the urethra gradually becoming accustomed to their use, until No. 10 passes with little pain, excepting at the meatus. The swelling in the perineum has entirely disappeared; not obliged to empty his bladder during the night, and but once every two hours during the day; the passage of No. 10 steel sound causing some pain at the meatus, the latter is incised with the meatotome; very little hemorrhage: ordered to continue quinia and iron.

22d. To-day passed No. 10 steel sound with ease into the bladder. The swelling in the perineum has entirely disappeared. Is passing a good stream, and not obliged to empty his bladder during the night.

The patient is called away from the city for six weeks; is ordered and instructed to pass a No. 10 elastic bougie two or three times weekly.

CASE XIX. *Two strictures; gradual dilatation; divulsion; partial recovery.*—April 12, 1872. McG. H., æt. 28; intemperate and dissipated; contracted first attack of gonorrhœa five years ago; recovered in about three months after pursuing the usual treatment; no injection used. After three years had another attack, which proved to be severe; was treated for a long time with copaiba, etc., internally; also used a variety of injections; has had a constant gleet discharge since last attack, which increased after connection and was frequently attended with scalding and a profuse yellow discharge.

Condition would improve with internal treatment; habits bad to within two months, when he stopped drinking, etc. Upon examination, two strictures are detected four and one half, and five inches from meatus. The stream of urine has been growing smaller during the last three months, and is voided with difficulty. No. 3 black elastic French bougie passes with some effort into the bladder.

June 20, 1872. He has taken internally tr. ferri, ergot, and cantharides; elastic bougies, gradually increasing in size, have been passed two or three times a week until No. 10 gives so much pain that he objects; a whalebone guide was now passed and upon it Gouley's modification of Thompson's divulsor, and both strictures thoroughly divulsed; less painful than the passage of the bougies; passed No. 12 steel sound; iron and quinia ordered internally.

July 2. No unpleasant symptom followed the divulsion; discharge almost entirely ceased; passed No. 13 steel sound; health much improved and feels encouraged; not obliged to void his urine during the night.

November 1. Have introduced No. 13 and 14 steel sounds once or twice a week with little effort; ordered to pass sound occasionally.

July 27, 1873. Reports for first time to-day since last November; habits have been good; feels excellent; passes a good stream; no gleet discharge; has passed the sound but a few times. Upon examining his urethra, only No. 10 sound can be passed; the stricture four and one-half inches from meatus has contracted considerably; the second one, five inches from meatus, cannot be detected with a bulbous-pointed bougie which passes the first stricture. Promises to call once a week until first stricture is dilated, or internal urethrotomy performed; no further internal treatment, as health is excellent.

October 1. Has failed to call again.

CASE XX. *Six strictures; gradual dilatation; use of meatotome; result partial; case still under treatment.*—W. H. J., æt. 27; irregular habits; had first attack of gonorrhœa five years ago; used a strong injection of sugar of lead (20 grs. to 3j). This aggravated his trouble, and for three months he passed bloody urine. A year after had a second attack; after this "a sore," as he terms it, formed on the under surface of the penis; an abscess following, a physician lanced it, and patient states "that he cut into the urethra." The abscess filled again and was lanced; after this he improved.

Two years ago had another attack, when an abscess again formed in the same place; had it lanced again, and states that "it healed by the external application of calomel." Five months ago had a chancre for which he was treated by a physician; the abscess again filled, and for this he now applies for treatment; first noticed that he had a stricture four years ago; gradually grew worse until two years ago, when he had almost complete retention. He was in the west, and a surgeon there operated on him while

under the influence of chloroform; was obliged to use a bougie once a month after this for a year.

September 10, 1873. To-day on applying for treatment he states that for the past two months he has not been able to use the bougie; that his stream of urine has been gradually growing smaller, until now it is frequently passed only in drops; that it requires great force on his part; that two weeks ago the fistulous opening on the under surface of the penis began discharging urine, and has given him much pain and annoyance since. On examination the meatus will scarcely admit No. 5 bulbous-pointed bougie, and is arrested three-quarters of an inch back from the meatus. The smallest sized elliptical bulbous bougie is with some effort, and after injecting the urethra with warm oil, passed into the bladder. On introducing it a stricture is detected in membranous part, and four distinct ones in the spongy portion of the urethra, also one at the meatus. The fistulous opening is about midway in spongy portion of the urethra externally, and communicates with the internal portion of the canal about one-half inch further back. A small silver probe can be passed through into the urethra. There is an unpleasant gleety discharge; urethra very sensitive; patient is compelled to pass urine very often day and night; ordered internally tr. ferri; also, gradual dilatation is commenced.

24th. No. 8 olive-pointed bougie can now be passed into the bladder; the fistulous track has closed; passes urine with more ease; treatment continued.

October 10. To-day No. 10 elastic bougie, giving much pain in stricture near meatus, the latter is freely incised; hemorrhage quite profuse and not easily controlled; is much improved in appearance and general health; ordered to pass No. 12 bougie beyond meatus night and morning.

14th. Though the hemorrhage has been somewhat troublesome it is now arrested, and can, with ease, pass No. 10 steel sound into the bladder; says he is sure that he is passing a larger stream than he ever did; is not obliged to empty his bladder at night; the gleety discharge has diminished. On examining his urethra with No. 5 bulbous-pointed bougie, which passes without much trouble into the bladder, all the strictures spoken of can be distinctly defined. The use of Gouley's dilating urethrotome is suggested for treating strictures in the spongy portion of the urethra, but he objects so decidedly that gradual dilatation is necessarily continued; internal treatment continued.

November 10. Patient remains about the same; the attempt to pass a larger than No. 10 steel sound causes great pain in spongy portion of the urethra.

Gleety discharge has about ceased, and patient is feeling, as he says, about well; has gained much in health and flesh. On a proper representation of his case, he states that after having attended to some very important business matters, will allow the use of such instruments as we think best.

Internal treatment discontinued; use of No. 10 steel sound continued twice a week.

From the foregoing cases we are led to believe that the treatment of stricture, by gradual dilatation when possible, is by far the simplest and safest method. That at first, in this method of treatment, the soft olive-pointed bougie is the best, until No. 7 or 8 is reached, and then the metallic sound is more rapid in its results and equally as safe.

That to insure success the gradual dilatation must be kept up for years at intervals.

That in strictures of small calibre, where it is only possible to introduce the whalebone guide, divulsion in the membranous portion, and internal urethrotomy in the spongy portion, are the better methods.

That strictures in the spongy portion, in consequence of their painful character, do not well bear treatment by gradual dilatation, particularly if the case is one of long standing.

In the cases which we have presented we see well exhibited some of the complications met with in the treatment of stricture, such as urethral fever and hemorrhage.

One case illustrates well the treatment of stricture of large calibre by means of the dilating urethrotome.

ART. XI.—*Cases of Penetrating Wound of the Abdomen and Chest, with Remarks upon the Treatment of such Injuries.* By JAMES C. REA, M.D., Resident Physician to the Episcopal Hospital, Philadelphia.

CASE I. *Penetrating Wound of Abdomen, with Protrusion of Omentum.*—M. E., a young married woman, was admitted to the Episcopal Hospital about 1 A. M. of January 4, 1874, having been stabbed in the abdomen by her husband some three hours previously. The wound was situated on the left side, just above the anterior superior spinous process of the ilium, and extended about one and a half inches from this point upwards and outwards; the omentum had protruded when the patient fell after the wound was received, and, when she entered the hospital, projected in a mass the size of the fist, and was somewhat congested, though there had been no bleeding from its surface. An attempt was immediately made to return the protrusion by gentle manipulation, with the patient lying on her right side, but without success. Cloths moistened with tepid water were then placed over the wound, and half a grain of morphia given by the mouth. The patient was allowed milk as desired, and kept fully under the influence of morphia. Twelve hours after the receipt of the injury, the attending surgeon, Dr. John Ashhurst, Jr., passed two ligatures of strong hempen cord through the centre of the pedicle of the protruding mass, one-quarter of an inch from the line of the wound, tying each ligature separately so as to strangle the part in two halves. The ligated portion was then cut off half an inch beyond the ligatures, and the pedicle secured beneath the skin and superficial tissues of the wound, the wound itself being closed with silver sutures and dressed with lint soaked in olive oil. The patient was given milk exclusively for diet, and a pill of calomel gr. $\frac{1}{8}$, with pulv. opii gr. $\frac{1}{4}$ every three hours; in the evening there was some pain, localized about the seat of injury, but no symptoms of diffused peritonitis.

Jan. 5. Had several evacuations during the night, but slept well in the intervals; tongue slightly coated, and patient somewhat feverish; changed

the pill of calomel and opium powder to calomel gr. $\frac{1}{6}$; Dover's powder gr. iij, every three hours. Pulse A. M. and P. M. 100.

6th. Renewed the dressing; the wound looking well; considerable induration in the vicinity of the wound from local changes in the peritoneum; pulse A. M. 98, P. M. 104; gave f3j whiskey every six hours in milk.

7th. Tongue cleaning; patient takes milk freely; gave in place of calomel and opium pill of 6th, quiniæ sulph. gr. ij, with pulv. opii gr. ss four times daily, and tr. ferri chlor. gtt. xx t. d.; patient has a desire for food, and is allowed farina and beef-tea.

8th. Wound looks well; patient in good condition.

10th. The induration about the injury has gradually increased until it presents a tumour in the abdomen the size of an orange, very hard and unyielding to the touch; allowed soup and broiled beef.

12th. Ligatures came away leaving a sinus one inch deep; the wound contracting.

15th. Gave quiniæ sulph. gr. 12 in the day in place of the pill of quinia and opium of 7th.

22d. For several days patient has complained of pain in the limb of the injured side with hyperæsthesia of its entire surface; noticed for the first time œdema of the leg with some knotting of the veins, apparently due to pressure of the mass of lymph on the recurrent vessels, and resembling in every respect the milk leg of pregnancy; bathing with a liniment of chloroform and tincture of aconite for a few days relieved the pain, and the other symptoms gradually subsided.

27th. Reduced whiskey to two fluidounces in the course of the day; takes house diet.

Feb. 18. Wound entirely healed and patient allowed to move about the ward in a wheel chair.

22d. The œdema of the leg with pain and knotting of veins has returned; patient ordered to be put to bed, and friction with liniment applied, as in the previous attack.

March 2. Patient discharged; able to walk short distances, but there is a tendency to œdema on exertion of any kind in the erect posture.

CASE II. *Penetrating Wound of Chest, with Pneumothorax and marked Emphysema.*—A. E., husband of the subject of Case I., admitted January 4, 1874, with a self-inflicted penetrating wound of the chest on the left side between the fourth and fifth ribs, one inch outside the mammary line. When first examined there was considerable emphysema of the walls of the chest, with pneumothorax; the emphysema afterwards extended until the whole side from the clavicle to near the hip became implicated. The wound was about one inch in length, cleanly cut, and was closed with one silver suture, and fine gauze and collodion, with a firm compress of dry lint. There was no evidence of the lung having been injured, no severe pleuritic pain at any time, nor any effusion into the pleural cavity. For the first few days the patient complained of slight pain on deep inspiration. His diet was limited to milk alone, and he was given a pill of calomel gr. ss, opii pulv. gr. $\frac{1}{4}$, every four hours. On the morning of January 5 his tongue was slightly coated; mouth and fauces dry; pulse 68; patient drinks milk in large quantities.

Jan. 7. The emphysema diminishing; stopped the pill of opium and calomel.

10th. Wound healed; emphysema entirely gone, and the vesicular murmur, which at first could hardly be distinguished, is now returning to the

lung on the injured side; the pneumothorax is also lessening every day; given house diet.

19th. Discharged, able to walk about without inconvenience; the lung sounds almost normal; one month after was reported as being entirely well.

CASE III. *Penetrating Wound of Chest; Pneumothorax.*—W. G., labourer, aged 21, admitted March 1, 1874, with three punctured wounds of the chest, situated just under the nipple of the left side; the wounds, each half an inch in length, had been inflicted with a pocket knife. Patient had also a flesh wound in the left arm. He was brought to the hospital immediately, reaching it probably twenty minutes after receiving the injury; there was then pneumothorax, and the lung sounds were much diminished in strength; the movement of the chest on the injured side was also laboured and somewhat painful. After closing the wounds with adhesive strips and compresses of dry lint, the injured side was immovably fixed with broad bands of adhesive plaster, as in cases of fractured ribs; this gave much relief and entirely eased the pain in respiration. Patient was then allowed milk as desired, and given opium gr. $\frac{1}{4}$, with calomel gr. ss, every four hours.

March 2. Tongue coated but moist: some pain in lower part of chest, no pleuritic rales or symptoms of effusion.

4th. Tongue cleaning; no pain in chest; allowed some beef-tea and corn starch; opium and calomel pill every six hours.

5th. Pneumothorax diminished; murmur returning in the lung; allowed bread.

7th. Patient allowed to get up; has a good appetite; stopped the opium and mercury pill; given house diet.

10th. Removed the adhesive strips for the first time; no pain on full inspiration; vesicular murmur still somewhat suppressed.

16th. Discharged cured; respiratory sounds normal, and the movements of the chest symmetrical and unaccompanied by pain.

Remarks.—These cases, apart from their intrinsic interest as examples of recovery from severe injuries, seem worthy of record as bearing upon the vexed question of the *constitutional treatment* to be adopted in the management of penetrating wounds of the great cavities. In the first place, it will be observed that in none of the cases was *blood-letting*, either general or local, found necessary. Secondly, what is called *absolute diet* was not prescribed in any instance, but on the contrary the patients were encouraged from the very beginning to take as much milk as possible, and in the course of a few days were given beef-tea in addition, while in Case I. the use of alcoholic stimulus was resorted to at an early period. Thirdly, *opium* was freely administered in all the cases, combined at first with small doses of *calomel* with a view of obtaining what may be called the anticipatory antiphlogistic effect of this remedy; of course had the bowel been wounded in Case I. mercury would not have been given, for fear of increasing the risk of fecal extravasation, but it is believed that this drug exercises a salutary influence upon the reparative process in wounds of serous membranes. *Quinia* and *iron* were given in large doses during convalescence in Case I. Finally, attention is invited to these cases as

illustrations of the benefit to be derived from the *restorative method* in wounds of the thoracic and abdominal cavities—a method which it is believed is destined to win as much favour in surgical as it has already in medical practice.

ART. XII.—*A Case of Lumbar Colotomy for Obstruction of the Rectum by Cancerous Tumours of the Womb.* By JOHN H. PACKARD, M.D., one of the Surgeons to the Episcopal Hospital, Philadelphia.

MRS. H., æt. 49, was seen by me, with Dr. J. M. Boisnot, February 4, 1874. She had been for about a year under homœopathic treatment on account of uterine trouble; and although her sufferings had steadily increased, the physicians had told her that she had no serious disease, and held out constant hopes of recovery. On examination, we found a very abundant cancerous deposit occupying the vaginal walls, bleeding freely at the slightest touch. The uterus was the seat of a massive tumour, so large as to encroach upon the calibre of the rectum, and to produce, by mechanical interference with the passage of feces, the most intense distress. As this last-named symptom was the chief source of her suffering, lumbar colotomy was advised, merely as a palliative. She was fully informed that the operation would probably not prolong her life, and that it might possibly shorten it; but she and her family were anxious to have the chance of temporary relief thus offered.

The operation was accordingly performed, February 7, in presence of Drs. Gross and Levis, and Mr. Vogler, a student with Dr. Boisnot. Ether having been administered to complete anæsthesia, an incision about four inches long was made, slightly curving outwards and downwards from the upper and outer corner of the left quadratus lumborum muscle. The underlying tissues were successively divided on a grooved director to nearly the same extent, until the layer of fat was reached which concealed the gut. This latter was rendered somewhat more difficult to find and identify, from the fact that the patient had for some time been afraid to eat more than just enough to sustain life; and from the mechanical conditions of the case, preventing the artificial distention of the bowel by throwing in either air or liquid. It was, however, hooked up with the finger, and caught with forceps, when two hempen threads were passed through its walls. An opening about an inch long was now made in it, and the edges at once turned over and secured to those of the skin-wound by eight or ten sutures of fine silver wire. For a day or two the wound was somewhat painful; it was dressed with a weak solution of carbolic acid. The bowels were moved through it a few hours after the operation, and subsequently about every forty-eight hours. Some nausea and vomiting occurred as the effects of the anæsthetic passed off, but were controlled by means of ice and carbonic acid water. A slight tendency to protrusion of the bowel at the artificial anus was readily overcome by the use of a compress and bandage.

At the present time, fifteen weeks since the operation, Mrs. H. remains quite comfortable; her only suffering is from the original disease, which has, of course, steadily progressed. A day or two ago she took

quite a long drive, with no other inconvenience than that due to the jolting of the carriage. There is not now, nor has there ever been, any unpleasant odour from the fecal discharges, which are readily obtained at intervals of from twenty-four to forty-eight hours. There is sometimes some annoyance from the accumulation of feces in the cul-de-sac formed by the gut below the lumbar opening; but it is not serious, and is generally overcome by the use of enemata.

It certainly seems strange that obstruction of the bowel should be so rarely produced by uterine tumours, in view of the great frequency of the latter. Mr. Hawkins, in the table of forty-eight cases appended to his admirable paper on Colotomy, in vol. xxxv. of the *Medico-Chirurgical Transactions*, mentions one (No. 41) in which colotomy was rendered necessary by cancer of the womb, there being also an adhesion of the ileum to this organ; and one (No. 47) in which the bowel was obstructed by fibrous tumours of the uterus. In the former case death ensued in twelve hours, while in the latter it was postponed eighteen days, and then took place from sloughing of the wound. Dr. Erskine Mason, in his valuable and exhaustive article in the number of this Journal for October, 1873, has also given an account of one case in which the uterus, rectum, and vagina were involved in cancerous disease, causing obstruction of the bowel, for which colotomy was performed. Death occurred three months afterwards from exhaustion. Besides this case, there is in his table another (No. 68) in which the rectum was occluded by cancer extending from the uterus, and the operation gave relief, death occurring from peritonitis four months and five days afterwards.

In the same volume of the *Med.-Chir. Transactions* with the paper of Mr. Hawkins, above quoted, there is a table of one hundred cases of uterine cancer, by Dr. Robert Lee; among these there were six in which perforation of the wall of the rectum is noted to have occurred, but none in which obstruction of the gut is mentioned. This latter symptom is indeed hinted at as among the possible results of cancer of the womb, by Walshe, Simpson, and others; but it cannot be so frequently met with as might, *à priori*, be supposed, or it would be more dwelt upon, and the means of its relief distinctly pointed out. When, however, obstruction of the bowel does occur, the symptoms are so distressing, and the agony by which life is worn out is so lingering and painful, that the advantage of colotomy can hardly be over-estimated. Of this the case I have reported seems to afford a striking instance. The attention recently drawn to this operation may warrant me in adding a few remarks upon the subject.

It can hardly be expected that this procedure can ever be looked upon, in the great majority of cases requiring it, as anything but a palliative. A case is indeed on record in which it was done for the relief of fistula in ano, and the patient recovered, the fistulous openings healing, and the artificial anus also becoming closed. Either the reporter of this case, M. Dufresne, in communicating it to the Académie de Médecine, in Au-

gust, 1844, or the correspondent of the *Medical Times* (vol. x. p. 446) remarks: "This case, which has no precedent in its favour, may astonish some persons, and the operation be considered as not indicated. All that can be said is, that Duguesceau's talent was sufficient to enable him to form an opinion as to the absolute necessity of the operation ere he performed it." It certainly seems as if the remedy were rather a heroic one for any ordinary case of anal fistula. Another case is mentioned in the same report, in which colotomy was performed on a man "whose abdomen had been penetrated by a cart-stake." Here, also, in the absence of further detail, it is somewhat difficult to imagine what the symptoms may have been which led the surgeon to open the colon. We are told that in this instance, in 1793, the operation "had succeeded;" but whether this means that the artificial opening ultimately closed, leaving the patient in his original state of health, or merely that life was prolonged, does not appear.

Whether the operation of colotomy is merely palliative, or may afford a chance of radical cure, must depend, in every case, upon the curability of the disease for which it is proposed. Thus there are perhaps some strictures of the rectum, not cancerous in their nature, in which the affording of a temporary artificial outlet for the feces may render it possible to apply other remedial measures with a happier effect; but the question would arise whether the advantage thus gained would really be worth the trouble and inconvenience the operation must entail.

In the case of children with imperforate anus, not penetrable by the usual operation, it certainly seems as if for them death were preferable to the chance of bearing about, from infancy to old age, the burden of an infirmity so mortifying, and so disqualifying from all the enjoyments of childhood and youth, as that of an artificial anus in the loin or groin. And yet the moral question arises, whether it is not the first duty of the surgeon to preserve life, at the earliest as well as at the latest period? And it would surely be a wrong for him to decide such a point without laying all the facts of the case before the parents, and at least letting the onus of its solution rest on them. With adults it is far different; and the operation may be urged strenuously in view of the great value of the merely palliative advantages it affords.

One or two points may be referred to, finally, as to the performance of the operation.

The oblique incision seems to me to offer great advantages over either the vertical or the transverse; it affords more room to work in than the former, especially where the space between the last rib and the crista ilii is limited; and it is more easily kept closed than the transverse—at least if, in the latter, any of the fibres of the quadratus lumborum muscle are divided.

The rule given by Allingham and others, to divide the deeper layers of

tissue to the same extent as the outer, lest the operator find himself working at the bottom of a conical hole, is a very important one. It must be remembered that the operation is undertaken in order to afford a free exit to the contents of the bowel; and this will not be accomplished if the deeper structures are insufficiently divided. Nor is anything gained by limiting the extent of the deeper sections, since there is no additional control gained thereby over the evacuation of liquid feces, while the difficulty of getting rid of any solid masses is much increased. And, by parity of reasoning, the incision through the wall of the bowel should be of ample size—an inch at least; this makes the securing of the edges to those of the wound in the skin much easier, and does not add to the risk of protrusion of the bowel.

An adequate number of silver wire sutures should be used to insure the complete contact of the everted wall of the gut with the skin; and these sutures need not be disturbed for weeks, unless they give rise to distinct annoyance by the twisted ends irritating the tissues.

1926 SPRUCE STREET, May, 1874.

ART. XIII.—*Alcoholism, Rheumatism, Bromo-iodism, Cerebral Embolism* (?), *Aphasia, Paralysis; Recovery*. By A. F. A. KING, M.D., one of the Physicians to Providence Hospital, Washington, D. C., etc.

HENRY W., labourer, aged 50, entered Providence Hospital November 18th, 1873. My annual period of attendance in the Institution beginning December 1st, I did not see the patient till that time. By reference to the record, however, I found his disease had been registered "alcoholism," but his indulgence in drink had been limited and transient. Not by any means a drunkard or "old toper," he had been intoxicated only a few days, and from careless exposure during that time had contracted rheumatism, which at the date of my first attendance was his chief complaint. He had been the victim of rheumatic inflammation on former occasions, but there was no history of cardiac complication, *nor could any physical signs of heart disease be discovered* on the most careful examination with Cammann's stethoscope, and none have been since developed. Bowels habitually constipated. Ankles swollen and painful, as were also the fingers, knuckles, and metacarpo-phalangeal joints, especially on the right hand. Ordered: R.—Ammon. bromid. \mathfrak{z} ss; aq. camph. \mathfrak{z} v; syr. g. acaciæ, \mathfrak{z} ij; morph. sulph. gr. j.—M. Sig.—Tablespoonful three times a day.

Dec. 18. Has continued medicine, with occasional doses of castor oil, without much benefit. Stop bromide mixture and take potass. iodid. \mathfrak{z} ij; aq. camph. \mathfrak{z} ij.—M. Sig.—Teaspoonful three times a day. R. Pulv. Doveri, gr. x at night. Painful joints painted with tinct. iodine.

24th. Rheumatic inflammation a little improved. Gums, mouth, and inside of cheeks sore; increased flow of saliva. To have mouth wash of alum and tr. myrrh. Dose of castor oil. Stop other medicines.

30th. Sore mouth getting better. Rheumatism about the same. R.—
Vin. colch. sem. gtt. xv, three times a day. Continue mouth wash.
Pulv. Doveri at night.

Jan. 1. Rheumatism rapidly improving. Mouth better. Still continues "wash" and colchicum with occasional anodyne at night.

He has been all along, and still continues in good spirits, without anemia, and takes no stimulants.

8th. Rheumatism getting well fast. Joints but little red or swollen. Can clasp a hand, and clench his own fist without pain.

On being questioned this morning, he was aphasic, answering "I can't," "I can't," but could say nothing else. On repeating questions to him he frowned, scratched his head (on the left side anteriorly, which, however, may have been *accidental*, I mean as to *location*), and set his teeth like a schoolboy puzzling over a sum in arithmetic, and then, rolling his cranium from side to side on the pillow, became agitated and embarrassed, and finally shed tears in a childish manner. On being instructed to nod or shake the head for "Yes" or "No" in response to questions, he did so with perfect intelligence. The mouth was drawn to the left side in so slight a degree as to be almost imperceptible. On protruding the tongue he could not hold it steady, but the organ appeared to move from right to left and *vice versa* with equal facility. Pupils normal and respond to light. He drags the right leg in walking, and there is slight paralysis of the right arm. Sensation in all parts unimpaired. To stop all medicines except castor oil when required.

The heart was again carefully examined, but no signs of disease in it could be discovered.

10th. The aphasic symptoms continue without change. Paralysis, especially of leg, has considerably increased. He cannot walk without assistance. On standing unsupported, with the eyes shut, he cannot balance himself, the tendency to fall being mostly backwards. No other head symptoms; no constitutional disturbance; appetite tolerably good. Frequent micturition during the last two days (but never before) has been his chief complaint. Cannot retain the urine; has also had involuntary evacuations from bowels on one or two occasions. The urine on examination was found to contain an abundant deposit of triple phosphate prisms.

13th. The aphasia is better. He can say a good many more words, but fails in many others. Cannot name articles presented before him although he knows what they are, but when the name is spoken by another he can repeat it indistinctly and with difficulty. Palsy of leg and arm also improving. The right hand and arm have been more painful lately, but there is not much heat or swelling in the affected joints. His last two nights have been restless, and he has repeatedly fallen out of bed.

During the remainder of January and February he gradually regained the use of his palsied limbs as well as the voice. He has been anemic, but takes nothing but good food and iron.

March 1. Left the hospital of his own accord. For the last six weeks he has been steadily improving. The rheumatism is quite gone. He walks without a stick. The paralysis of the right hand, arm, and leg is nearly well, though their *power* is still somewhat impaired. A little "thickness of speech" still remains. The vesical and rectal sphincters have regained their integrity except that when having, as it were, consented to urinate, the water flows before he can get to the closet. The

urine is clear and almost devoid of phosphates. The appetite and digestion are both good, and he is in jolly spirits. No medicine has been given in the last few weeks except tinct. ferri chloridi and occasional doses of castor oil.

Remarks.—Since this case recovered we are (and fortunately) left in doubt as to its exact pathology, and may therefore be allowed to theorize in regard to it. We presume it to have been embolism of the left middle cerebral artery. The embolic body was probably detached from the heart or aorta, and *this* despite the absence of physical signs, for while it is true that organic changes of a certain prodigious degree can be discovered generally by physical examination, it must be admitted that lesser degrees of structural change may altogether escape detection. The embolism we presume was slowly disintegrated by fatty metamorphosis, before any extensive cerebral softening had taken place, though that *some* organic cerebral change had occurred was indicated by the urinary deposit.

A question of great practical importance is this: Was not the embolism really produced by the medicines employed to relieve rheumatism? In other words, did not the salivation, or the blood changes incident to it, produced by the excess of bromides and iodides, lead to the separation of an embolism that would otherwise have remained securely attached to its seat in the heart or aorta? If the truth could be known, this question, we apprehend, would have to be answered in the affirmative. In the absence of proof we may at least enjoin additional caution while administering these two oft-used haloids for prolonged rheumatic inflammation.

ART. XIV.—*Case of Fracture of the Neck of the Femur treated by a New Apparatus.* By J. C. BISHOP, M.D., of Middleport, Ohio. (With a wood-cut.)

ON the evening of March 13th, 1873, I was hastily summoned to Mrs. D., æt. 78; nervo-bilious temperament, well nourished, and vigorous for her age, and obtained the following history of the case:—

About sundown, while walking along a narrow pavement in the outskirts of the village, made by placing narrow boards side by side on short pieces of scantling, which were allowed to project somewhat over an accompanying drain, she struck her foot against some inequality in the pavement, and fell, striking the upper portion of the left thigh against one of the projecting pieces of scantling, and was unable to rise; and when lifted to her feet, was unable to stand or even move the left foot from the ground. She was carried some distance home on a lounge, and, before being placed in bed, made another unsuccessful attempt to stand, the foot hanging uselessly on the floor. At the time of the fall she "felt something give way" at the hip, and from that time experienced intense pain in the hip-joint, extending along the thigh to the knee, *especially*

severe on any attempt to move the injured limb. An examination by comparison with the unaffected side showed *flattening of the trochanter*; measurement indicated from *one to one and a half inches shortening*. There was well-marked *eversion of the foot*, the heel of the injured limb rested above the malleolus of the opposite leg, and slight *crepitus*. Diagnosis: fracture, probably intra-capsular, of the cervix femoris, with, of course, a doubtful prognosis. An anodyne was prescribed, and, with a promise to call on the following morning, I left. Knowing the difficulty in obtaining favourable results in the treatment of this injury when occurring in *aged persons*, on account of the necessary and protracted *confinement to bed in one position*, imposed by the various contrivances recommended, therefore it occurred to me that the long splint of Liston, Physick's modification of Desault's, and Gibson's modification of Hagedorn's, were alike objectionable in this case, because they imposed *too much of this confinement*, while the proceeding recommended by Sir Astley Cooper, of simply supporting the limb on pillows, *demanding too little*. Now, if an apparatus could be devised which would occupy a *middle ground*, and, while it maintained the proper coaptation of the fragments, would permit the necessary movements of the body (the previous robust health of the patient considered), it would at least offer *some chance* for a favourable result. At my next visit I found the patient irritable, despondent, and wearied. She informed me that she had not been able to lie on the back for even a few hours at a time for years, and that she had frequently suffered from attacks of dyspnoea, and palpitations while lying in that position. Here was a positive contra-indication to protracted dorsal confinement; and what exerted no particularly salutary influence mentally, was a knowledge of the fact that a sister had died a few years before from a similar injury. I then made accurate measurement of the size of the hip, thigh, knee, and ankle, with distance from anterior superior spinous process of ilium to the knee and foot, and constructed a *splint of wire*, slightly larger than the measurement, to conform to the shape of the hip and limb throughout, which would retain the knee flexed at an angle of about 45° . This wire splint was so fashioned as to envelop the outer surface of the hip and limb, so that, when applied, it should cover slightly more than half the circumference of the leg, and, extending to the waist, it could be firmly fastened there, while, at its distal extremity, the foot would be retained in its natural position. This "splint" was composed of (see figure) four small wires,



about the size of a No. 10 bougie, bent in the shape desired, and placed longitudinally, and supported by circular wires of the same size, placed transversely at a distance of from four to six inches from each other, and soldered firmly to the crossings of the longitudinal wires, while the latter, at their upper extremity, were in turn as firmly soldered to a tin band one and one-half inches in width. The inner surface of this splint was covered first with a single layer of muslin, then well padded with raw cotton, and over this another layer of muslin, which was so fastened as to retain the

cotton and first layer of muslin in place. Into this the entire limb was placed after securing the necessary apposition of the ends of the bones, and secured by application of the roller, so as to equalize the circulation by rendering an equal pressure throughout. The upper end was firmly secured around the waist by a broad padded bandage, while the lower end held the foot. The wire was kept in place for six weeks before its removal, although, after the first few days, broad bands of muslin were substituted for the roller. After the sixth week it was removed for a short time daily, the time being gradually extended, until the eighth week it was left off entirely, and passive motion instituted; and to-day, slightly more than one year from the date of the injury, this aged lady walks without the assistance of a cane even up and down stairs, almost as sprightly as before the accident, with only a perceptible limp, the result of less than one-half inch of shortening. During the progress of the case the patient was enabled to change her position so frequently that she was almost entirely free from that distressing complication—"bed-sores," only one of which made its appearance, and that on the natis of the right side, and which yielded kindly to a few applications of calomel alone. No other untoward symptoms were manifest during the entire time to the period of recovery.

It will be seen that the position of the limb, as maintained by this apparatus, is after the manner of the "double-inclined plane," with slight extension and counter-extension; the upper extremity fastened around the waist, acting as the counter-extending force, while the foot, confined to the foot-piece of the wire, together with the flexed position of the knee, is sufficient extending force. The author claims that this apparatus, in the treatment of fractures of the neck of the femur, gives perfect rest to the part, and at the same time a certain freedom of movement of the rest of the body, which is no less essential, and, under protracted confinement, much less irksome than when treated by the ordinary appliances. It will not be denied that absolute confinement on the back, especially in aged patients, has been a fruitful source of mortality, and caused many a failure to produce satisfactory results in this class of cases in the hands of some of the most eminent surgeons in Europe and America. Another advantage claimed is, its *lightness* and *firmness*. In ordinary cases the wire used in its construction need not be so heavy as those used in the construction of my splint, and at the same time sufficient firmness may be secured. As it is, it is even lighter than any of the splints constructed of wood with which I am acquainted. Again, the padding may be of such material and so light as to permit perfect ventilation through it, thus supplying an essential element to the integrity of the limb, which is prevented by the great majority of the appliances now in use. I am not aware that any precisely similar instrument has ever been employed in this class of cases; and I would earnestly recommend it to the notice of the profession, with the assurance that it will be found to fulfil the indications in the treatment of fractures, not of intra-capsular alone, but in those occurring without the capsule, in both aged persons and in the younger subjects as well. The excellent result afforded in this very unpromising case I have no doubt is due wholly

to the apparatus by keeping the joint at perfect rest, while great freedom of movement of the body was permitted; and that it will act equally as well in the future I am well satisfied.

April 9, 1874.

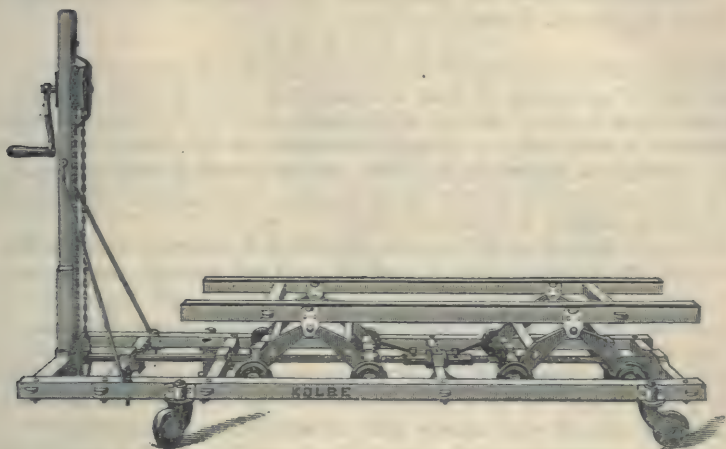
ART. XV.—*Description of a Hospital Bed-Elevator and Carriage, designed especially for Surgical Wards.* By THOMAS G. MORTON, M.D., Surgeon to Pennsylvania Hospital, and Emeritus Surgeon to Wills (Ophthalmic) Hospital. (With a wood-cut.)

THE transfer of surgical or medical cases without discomfort to the patient, from ward to ward or to and from the amphitheatre for clinical demonstration, operation, or otherwise, has, for a long time, been a matter of considerable interest to me; and I have, with others, for years past thought that some contrivance might be devised to move serious or suffering cases.

The transfer of patients in bed for cleaning a ward, or for any other purpose, requires, in most cases at least, three and often four assistants, and when the patient is upon a water-bed it is found impossible, unless the water is first emptied. All hospital surgeons must have observed how often patients, with serious and painful diseases, have suffered intensely at times from the jarring incident to their removal to the lecture-room or from ward to ward; more frequently the convalescents in a surgical ward are detailed for the work, or at least to assist, and generally but little care is bestowed on the careful carriage of the sufferer. For these reasons, some two or more years ago, it occurred to me that a truck might be constructed with an elevating apparatus so arranged that, after being pushed underneath a bed, it could then be made to lift both bed and patient from the ground, while, the apparatus being on wheels, transportation could be easy and without shock or jarring.

With the assistance of Mr. R. F. Shreiner, the apparatus, which is shown in the accompanying figure, was devised and placed in successful operation. It was made in the spring of 1872, and was on exhibition at the College of Physicians at the time of the meeting of the American Medical Association in Philadelphia, in May of that year, and since that time has been in constant daily use at the Pennsylvania Hospital, where it has been found indispensable. The apparatus can be readily manipulated by one person, although two can move it about more comfortably. When in the clinic room the patient upon his bed can, with ease, be moved in various directions for class demonstration without discomfort to the patient or annoyance to the lecturer.

The apparatus consists, as will be seen by a reference to the wood-cut, of a double truck, the upper one elevated by a series of cams which run



upon a narrow iron track ; a long right and left screw, worked by an endless chain upon a crank at one end raises and depresses the cams. The apparatus is made of oak, and the hinges of brass, the wheels are supported by steel pins. By experiment it has been found that four hundred pounds can be lifted quite free from the floor in four seconds, and without difficulty a water-bed, which weighs about seven hundred pounds, with patient, can be elevated and readily moved. The elevation of the bed an inch from the ground is all that is required. The apparatus, if properly made, will not readily get out of order ; the first one placed in the Pennsylvania Hospital remained in good working order, without repair, nearly two years, since then a second has been required, and has been found to work very satisfactorily, and is essentially labour-saving.

Such an apparatus would have been of very great service in our army hospitals, especially those constructed after the plan of the Mower Hospital, at Chestnut Hill, Philadelphia, where the wards, some forty-eight or more in number, all diverged from a circle upon the same level.

The apparatus measures six feet five inches in length by two feet five and one-half inches in width ; it can thus be readily passed under our beds at the Pennsylvania Hospital, which measure six feet five inches in length by two feet six and one-half inches in width, and are one foot three and a half inches in the clear from the floor to the under surface of the bed. Some slight variation in the construction of the apparatus would be required in order to suit the different forms of hospital beds ; but, as a rule, most of these have the same general size and make up. The adaptation of a lever instead of the screw movement has been suggested, but so far, I have not been able to apply the elevating power by this method.

ART XVI.—*Sulphate of Zinc in the Treatment of Poisoning by Rhus Toxicodendron and R. Radicans.* By CHARLES H. HUMPHREYS, M.D., of Brandt, Miami Co., Ohio.

SEVERAL articles having of late appeared in this Journal relative to the treatment of poisoning by rhus toxicodendron and R. radicans, without mention being made of the use of the sulphate of zinc in the treatment of such cases, I deem it my duty to call attention to the efficacy of that salt as an application in such cases. The use of that drug was suggested to me some years since, and, after trying it, I have since used no other remedy, as it afforded speedy and certain relief.

The usual form in which I use the sulphate is in solution in water, about ʒss to aq. Oj, and direct the patient to bathe the part affected frequently.

In every case (some twelve or fourteen in all) in which I have used the remedy the vesicles and inflammation rapidly disappeared, desquamation of the skin commencing usually in less than forty-eight hours from the first application of the lotion, and frequently a decided change occurring in twenty-four hours. I now never use any other application—as the patients assert that it gives speedy relief to the itching and burning.

My last case was that of a young man, æt. 16, who has always been susceptible to the subtle influences of the rhus, “getting poisoned if he only looked at his enemy,” as he expressed it. Both hands and wrists were inflamed, and enormously swollen. In urinating he conveyed the poison to his penis, affecting the whole organ, and the scrotum, the lower part of the abdomen, and part of the thighs. The prepuce was swollen to the size of a common orange and distended with fluid, giving it almost a transparent appearance; there was phimosis, completely hiding from view the glans; the scrotum was enormously swollen. I was sorely tempted to puncture the prepuce, but decided to try the zinc, which produced absorption of the fluid in thirty-six hours, and in forty-eight hours the skin was rapidly desiccating, and in a few days all traces of the disease had disappeared.

Some weeks ago I was asked to visit a man about 40 years of age, poisoned with rhus. I found him delirious, and with considerable fever; pulse 110, tongue thickly coated, bowels constipated. Upon the face was an eruption of an erysipelatous nature, and from the amount of constitutional disturbance I was led to believe it a case of facial erysipelas, until informed by my patient's wife that a few days previous, while in the woods, he had come in contact with poison-oak, and upon returning home remarked that he would again be poisoned, that it shortly did make its appearance, first upon the nose, thence spreading over the cheeks and eyes. The inflammation had extended over the forehead and into the scalp, both eyes were quite closed, both ears, cheeks, and lips were very much tumefied and pitted on pressure, and the patient's features were so much disfigured that he was not at all recognizable.

I gave him a free purge, and zinc. sulph. ʒj in aqua Oiss to sponge his face with every hour during the day and a few times through the night. In two days I found my patient walking about the house, and “feeling quite well.” The cedema about his eyes had nearly disappeared, and desquamation of the epidermis from his face was proceeding in the usual manner.

The foregoing cases, with others, could be related more fully did I think the detailed histories of the cases called for.

REVIEWS.

ART. XVII.—*A Practical Treatise on the Surgical Diseases of the Genito-Urinary Organs, including Syphilis. Designed as a Manual for Students and Practitioners. With Engravings and Cases.* By W. H. VAN BUREN, A.M., M.D., Professor of the Principles of Surgery, with Diseases of the Genito-Urinary System and Clinical Surgery, in Bellevue Hospital Medical College, etc., and E. L. KEYES, A.M., M.D., Professor of Dermatology in Bellevue Hospital Medical College, etc. 8vo. pp. xvi., 672. New York: D. Appleton & Company, 1874.

THE high reputation of the authors of this volume, and the position which they claim for it in their preface, make it incumbent on the reviewer to examine the work with more than ordinary care, and to judge it by a higher standard than would be employed in dealing with the production of an obscurer writer, or with a book of less ambitious aim.

Referring to the tendency observed in all large communities for the practice of medicine to become subdivided into special departments, and to the facilities for clinical study afforded by large city hospitals, and the opportunities for teaching furnished by the establishment of medical schools, the authors add that cities are "the natural repositories of accumulating experience and the sources of advancing knowledge.

"It is from city practice and hospital experience, therefore," they go on to say, "that the materials for the preparation of text-books on special subjects would be naturally sought, and from these sources the substance of the present work has been mainly derived. Its object is to present to the student and general practitioner a succinct account of the nature and treatment of the diseases incident to the genito-urinary organs as they are encountered in private and hospital practice by those engaged in their daily and especial study. The literature of this department of surgery has been exhaustively studied with the purpose of reproducing every fact of practical value. It is hoped that the reader will recognize a conciseness in the grouping of these facts which will save him the necessity of reference to the numerous monographs and essays from which they have been collected."

It will thus be perceived that the authors professedly speak *ex cathedra*; they, as specialists, undertake to convey, in the volume before us, information which they have had special opportunities of acquiring, to their less-favoured brethren; and they not only communicate the results of their personal experience, but they claim, moreover, to have exhaustively studied the literature of their subject, and to have condensed in their work all that is worth knowing in regard to the diverse and intricate subjects of which they treat.

Before entering upon a detailed examination of their pages, let us say at once that, even when judged by the high standard which they themselves have set up, the authors' work impresses us as one of much merit, and as one which, upon the whole, satisfactorily fulfils its design. As a practical work it is, we think, particularly deserving of commendation; it covers more ground than any similar volume in our language with which we are acquainted, and its teachings upon almost all subjects are such as must be

approved by every judicious surgeon. Upon some few points we venture to think that the authors convey erroneous doctrine; but the very fact that upon these points such diverse views are entertained by equally competent authorities, shows that surgeons are still far from having acquired certainty upon these matters, and that with regard to disputed questions it is often safer to be undecided than dogmatical.

As to the encyclopediacal character claimed for the work, while we admit that the authors' reading has evidently been wide and profitable, we should hardly call it *exhaustive*; this epithet is, indeed, rather a large one, and in the present era of prolific authorship can seldom be applied with justice. In one respect the work is, we think, decidedly amenable to criticism; this is that the authors' excursions amid the *prata jucunda* of surgical literature seem to have begun and ended on the other side of the Atlantic: indeed the ingenuous student, or the inquiring general practitioner, who should rely exclusively upon Drs. Van Buren and Keyes's treatise, would inevitably infer that, apart from the authors, America had produced but a dozen or so surgeons living in New York, and a much smaller number sparsely planted over the rest of our wide country. We have no sympathy with that provincial spirit which regards American as better than European work, simply because it is American; but on the other hand we maintain that the work of our own countrymen is certainly no worse than that of foreigners, and that in a volume designed as a text-book for American students it should receive at least a share of attention. As an illustration of what has been said we may mention that among the hundreds of references in the foot-notes, including very many to English, French and German journals, we have been able to find but one to any article in the American Journal of the Medical Sciences, and that reference so indefinite that we cannot resist the suspicion that it has been taken at second-hand from Dr. Bumstead; but we know that this Journal has, during its forty-seven years of existence, contained papers, by writers in all parts of our country, which are of interest and value to students of genito-urinary surgery, and which, in our opinion at least, the authors might have advantageously consulted in the preparation of their work.

Leaving this subject we shall now invite attention to the general plan and execution of the book, and afterwards to such points as seem to us to call for special comment. The whole work is divided into two parts, the first treating of "Diseases of the Genito-Urinary Organs," and the second being devoted to the consideration of "Chancroid and Syphilis." The *first* part consists of twenty-eight chapters, and takes up successively Diseases of the Penis, Diseases of the Urethra (including Gonorrhœa and its complications, and Urethral Stricture), Diseases of the Prostate, Diseases of the Bladder, Vesical Calculus and its treatment by Lithotripsy and Lithotomy, Diseases of the Ureter, Diseases of the Kidney, Diseases of the Scrotum, Diseases of the Testicle, Maladies involving the Genital Function, Diseases of the Cord, and Diseases of the Vas Deferens and Seminal Vesicle. The *second*, and shorter part, contains thirteen chapters, two of which are devoted to Chancroid, and the remainder to Syphilis; the chapter on Syphilitic Diseases of the Eye, as we learn from the preface, has been entirely furnished by Dr. H. D. Noyes, and the authors acknowledge their indebtedness to Dr. Roosa for aid in the preparation of the chapter on Syphilitic Diseases of the Ear.

In Chapter I. are described the various affections met with in the penis, excluding those which involve the urethra. Wounds, contusions, and

so-called fractures of the penis are briefly considered, as are the various forms of tumour met with in this organ, and diseases of the prepuce and glans, including phimosis, paraphimosis, balanitis, vegetations, etc. In the account of the operation of circumcision, nothing is said about the use of fenestrated forceps for the preliminary introduction of sutures, and the instrument figured in the accompanying illustration is unfenestrated, though dubbed with Ricord's name; but the peculiarity of Ricord's instrument, according to Guérin and other systematic writers, consisted precisely in its being fenestrated instead of plain; it is but right to add that Ricord is said by Guérin to have subsequently abandoned the use of the suture altogether in this operation in favour of the *serre-fine*.

Chapter II. opens with an account of the anatomy of the urethra, and a description of the operation of catheterization. The proper curve for urethral instruments was carefully studied many years ago by Dr. Van Buren, by means of ingeniously planned experiments carried out in conjunction with the late Dr. Isaacs, and was ascertained to be the same as that recommended by Sir Henry Thompson, in his well-known work on stricture, and which is now commonly spoken of as the "Thompson curve." Deformities of the urethra, including hypospadias and epispadias, are briefly described, and in connection with the former, Bouisson's operation for incurvation of the penis is referred to; but no mention is made of the ingenious modes of treatment advocated respectively by Mr. Holmes, of London, and by Prof. Pancoast, of this city. Two pages are devoted in this chapter to the subject of "*Urethral and Sexual Hygiene*," and frequent references to the same occur in various parts of the book; the author's views upon these delicate topics seem to us eminently just and practical, and their instructions upon these points might be profitably studied by all medical men. In one particular they seem to us, however, to have gone rather too far, and that is in the freedom, not to say looseness, with which they have prescribed wedlock for all forms of sexual discomfort; apart from the moral side of the question, and the fact that the happiness of the innocent bride should be at least as much considered as that of the repenting sinner who proposes to seek health in matrimony; we greatly doubt whether marriage entered into simply as a means of cure, often proves efficient in conferring the benefits which are sought from it.

In speaking of *contusions of the urethra* (ruptured urethra), the authors say:—

"If the patient can pass water, and there is no infiltration of urine, no attempt should be made to introduce an instrument into the bladder immediately after contusion of the urethra, for fear of making a false passage at the injured point of the canal."

This we believe to be unsafe teaching; with care, a flexible catheter can almost always be passed in these cases, and the patient is, we think, much less exposed to the risk of urinary extravasation if a catheter is promptly introduced and kept in, than if he is permitted to attempt to pass water without the aid of an instrument. Failing to pass a catheter, the surgeon should, we think, at once lay open the urethra from the perineum. Upon this subject our readers may advantageously consult an interesting case reported by Dr. T. F. Betton in the number of this Journal for February 1837, p. 389, with an appendix by the editor, giving the details of a number of cases of a similar character.

A few pages are devoted in this chapter to the curious affection known as *Urethral or Urinary Fever*, and the subject is again adverted to in

one of the chapters on Lithotrixy. The authors do not seem to us to have thrown any new light upon the pathology of this disease, and, while recognizing in some cases a septicæmic or pyæmic condition, and in others one of uræmia, fall back upon our old friends "shock and reflex action," as being the cause of the symptoms in most instances. We have so often in these pages discussed the pathology of urethral fever and its congener gonorrhœal rheumatism, and given our reasons for believing that both are closely analogous to, if not actually mild forms of, pyæmia, that we need not revert to the question at this time, further than to say that the terms "vague suspicion" (p. 81), "vague opinions" (p. 321), and "vague ideas" (p. 322), by which the authors characterize the views of those who think as we do, seem to us much more applicable to the doctrines of "shock and reflex action" (pp. 46, 47), and "idiosyncrasy" (p. 81), which they themselves advance. We cannot but admire the *naïveté* with which Dr. Keyes tells in a foot-note (p. 46) how he has experimentally practised hypodermic injections of *urine* in the unsuspecting patients of the Charity Hospital—an observation *in corpore vili* with which he is so much pleased that he narrates it over again on page 144, adding that the patients ingenuously supposed that they were receiving injections of morphia.

This chapter ends with an account of *Foreign Bodies in the Urethra*, for the removal of which, when long and soft (as a bit of catheter or stick), a little operation is recommended which we do not remember to have seen previously described, and which is certainly ingenious and worthy of trial; this consists in transfixing the foreign body with a stout needle passed through the floor of the urethra, and pushing back the canal as far as possible, like a glove over a finger, then withdrawing the needle and transfixing again, and so gradually coaxing the foreign body forwards until it can be seized at the meatus.

Chapter III. is devoted to a consideration of *Gonorrhœa*, which the authors in common with most modern writers describe as being simply a virulent *urethritis*, though they think it desirable for practical purposes to retain both names, and to apply the latter to all cases of doubtful origin. In the treatment of gonorrhœa the authors attribute more value to internal medication than we are disposed to do, and particularly to the administration of copaiba, oil of yellow sandal-wood, and cubebs; although, as our readers know, we follow Abernethy in approving of the "constitutional treatment of local diseases," we have never been able to see the propriety of systematically burdening the alimentary canal with these nauseous remedies in seeking a cure for an affection of the urethra, which can in most instances be so conveniently and so satisfactorily treated by topical means alone. No allusion whatever is made to the use of copaiba by urethral injection, a mode of treatment which we believe originated with Dallas, of Odessa, and which, though no doubt valueless, appears at first sight sufficiently plausible, one would have thought, to have merited mention, even in the way of warning, in such an exhaustive work as this professes to be. In speaking of *deep urethral injections*, the instruments devised by Bumstead and Bigelow are referred to and figured, but no allusion is made to the equally ingenious appliances of Morgan, of Dublin, Durham, of London, and Hewson, of Philadelphia.

In Chapter IV. are considered the complications of gonorrhœa, including gonorrhœal rheumatism, and the two forms of gonorrhœal ophthalmia—the rheumatic and the conjunctival. *Epididymitis*, one of the most troublesome complications of gonorrhœa, is considered in another

part of the book in connection with diseases of the testicle. In the treatment of gonorrhœal conjunctivitis, or (as we prefer to call it) ophthalmic gonorrhœa, the authors advise free, and, if necessary, repeated division of the external canthus, so as to relieve the eye from pressure; and, in the early stage, if the patient be robust, repeated abstraction of blood by leeches or cups, together with irritant purgatives and low diet. We confess that this plan of treatment seems to us rather heroic; we are disposed to think that in a majority of cases the free administration of quinia will prove more truly antiphlogistic than the repeated application of cups. As regards local treatment, the authors justly lay stress upon the importance of cauterization and the enforcement of cleanliness.

Stricture of the Urethra forms the subject of the next four chapters; and this is, upon the whole, one of the most satisfactory portions of the book. The various instruments needed in the management of stricture, and the proper mode of employing each, are carefully described, and no one can read these pages without perceiving that in this department of surgery the authors speak by the card, and teach out of the full knowledge of a large experience. Here we find much to praise and little to criticize. We cannot, indeed, share the authors' preference for metallic over flexible instruments in the treatment of stricture, and are somewhat surprised at their statement that "patients tested, at the same sitting, with soft and steel instruments, almost invariably complain less of the latter;" for our own observation has led us to form a different conclusion. It is but right to add, however, that Drs Van Buren and Keyes only recommend steel instruments of a size not less than No. 9 of what they call the "American scale," *i. e.*, five millimetres, or about one-fifth of an inch in diameter. The modes of treatment commended by the authors are simple dilatation, rupture, or divulsion, and internal and external urethrotomy. The method of continuous dilatation is but slightly referred to, which we think an error, for we regard it as the next best method to simple dilatation; and, though Arnott's use of fluid pressure is mentioned, no reference is made to the more recent and ingenious mode of employing the same agent advocated by Coze, of Strasbourg; nor to the use of laminaria bougies, as practised by Reeves and Newman. Yet these are modes of treatment the merits or demerits of which should, we think, have been pointed out in a text-book written by specialists upon the subject of their specialty. It could not be expected, perhaps, that all the urethrotomes and divulsors which the ingenuity of surgeons has suggested, should be described; and, indeed, the authors profess to give an account only of "the type instruments of each class." Yet room, we think, might have been advantageously made for a notice of the excellent splitting instrument devised by Richardson, of Dublin; and we should like to see an authoritative condemnation of a certain urethrotome which is found in our cutlers' shops under the name of a learned Professor of Philadelphia. Again, we think some notice should have been taken of the ingenious modifications in the operation of external urethrotomy suggested respectively by Jordan, of Birmingham, and by Mastin, of Mobile; and, in connection with the operations of puncturing the bladder through the rectum and above the pubes, some account should have been given of Brander's method of puncturing through the symphysis, and of Cock's recently revived mode of "tapping the urethra at the apex of the prostate." Still these are, after all, comparatively unimportant defects; and we should not, perhaps, have thought it worth while to notice them but for the authors' assertion that they had exhausted the literature of their subject.

We have been particularly struck by the extent to which the authors push the maxim "*Festina lente*" in the treatment of stricture by simple dilatation. They lay it down as a rule in these cases,

"That it is bad surgery . . . to reintroduce an instrument—unless it be filiform—before the lapse of at least seventy-two hours, and that more rapid progress will be made with the case by waiting till after ninety-six hours—often even until the sixth, seventh, or eighth day;" and that, "in brief, intervals of a week, especially in cases of old stricture, are generally more beneficial than any shorter period."

They also direct that, when an instrument has reached the bladder, it should be at once gently withdrawn, and believe that nothing is gained by leaving it even for a moment.

In a foot-note to the section on *External Perineal Urethrotomy, with a Guide*, Dr. Van Buren gives a plain, and, so far as we can judge, a perfectly candid and apparently truthful account of the introduction of what are commonly known as tunnelled urethral instruments—an account which those of our readers who also read the *New York Medical Record* will hardly need to be told differs in essential particulars from that which has been somewhat industriously circulated by a former assistant of Dr. Van Buren, who has thought proper to claim the invention as his own. We have no desire to take any part in this controversy, but feel that it is due to Dr. Van Buren to say that, judging from all the evidence on the subject which has been brought to our notice, we see no reason to doubt that the merit of the original suggestion of tunnelled instruments, be it great or small, is due to him, and to him alone.

We cannot do better, in terminating our examination of this part of the volume, than to quote the authors' "*Summary of Treatment of Stricture.*"

"1. Alkalies, diluents, and rest, are serviceable in most cases of stricture; sometimes indispensable if there be any serious complication.

"2. All uncomplicated strictures, not highly irritable or resilient, should be treated by dilatation with soft instruments up to No. 9, conical steel sounds afterwards; reintroductions being made every fourth to eighth day—the older the stricture the longer the interval as a rule, and intervals of one week being most serviceable in the majority of cases.

"3. All strictures at or near the meatus must be cut.

"4. Resilient, very irritable, and, as a rule, traumatic strictures are best treated by divulsion if they lie below four and one-half inches from the meatus, otherwise by internal urethrotomy. When a resilient stricture cannot be divulsed, it should be cut—internally.

"5. Impassable stricture may usually be overcome—where there is no restriction—by time, patience, and skill, with whalebone bougies. If finally proved impassable, the treatment is external perineal urethrotomy.

"6. Retention is treated by hot baths, ether, opium, tincture of the sesquichloride of iron; failing these, by puncture above the pubis with the aspirator or through the rectum to gain time; or by external perineal urethrotomy without a guide.

"7. For stricture complicated by abscess, infiltration, or many and large fistulæ, and for extensive traumatic stricture, external perineal urethrotomy.

"8. For infiltration, free incisions, stimulants, supportives, with thorough external division of the stricture.

"9. For fistula with loss of substance, local cauterization, lace suture, or plastic operation. Where there is no loss of substance, complete dilatation of the stricture is soon followed by closure of the fistula."

Chapters IX. to XI., inclusive, are devoted to *Diseases of the Prostate*, and furnish an excellent account of the various affections to which this

small but sometimes troublesome organ is subject. In referring to Thompson's anatomical investigations as to the frequency of enlarged prostate in old persons, no reference is made to Dr. Messer's more extended series of dissections (though Sir Henry Thompson himself refers to them with proper acknowledgment), nor to the similar but even more extended investigations made respectively by Professor Dittel, of Vienna, and by Dr. J. W. Lodge, of Philadelphia. To the two forms of "bar at the neck of the bladder," ordinarily recognized by surgical writers, Drs. Van Buren and Keyes add a third, which they describe as "centric median hypertrophy, where a transverse bar of hypertrophied tissue is formed, instead of the usual oval tumour." We confess that we see no advantage in separating this from the more common form of median hypertrophy which constitutes the so-called "third lobe of the prostate." The pages devoted to the treatment of enlarged prostate are eminently judicious and practical. We should like, however, to find some expression of opinion as to the plans which have been from time to time suggested as modes of *curative* as distinguished from *palliative* treatment—such as the use of pressure, originally employed by Physick, the various crushing and tearing operations still in vogue amongst French surgeons, and the interstitial injection of tincture of iodine recommended by Heine.

The section on *Cancer of the Prostate* does not impress us as favourably as those which precede it. Tanchou's statistics are quoted, but Thompson's exposition of their fallacy is not referred to, and no notice is taken of the very elaborate memoir on prostatic cancer recently published by Jolly.

Chapters XII. and XIII. are occupied with an account of various *Diseases of the Bladder*. A short account is given of the condition known as extroversion or exstrophy—the authors persist in spelling it *extrophy*¹—of this organ, but no mention is made of the ingenious operations suggested or practised, with the hope of effecting a radical cure in cases of this affection, by Simon, Lloyd, Athol Johnstone, Holmes, and Sydney Jones. The less ambitious, but more satisfactory mode of treatment by plastic operation, is briefly referred to, but its history is carried no further than the year 1865; had the authors been familiar with one or two papers which have appeared in this Journal during the last few years, they might, we think, have made this section of their work both more interesting and more valuable than it is.

Wounds and ruptures of the bladder, the presence of foreign bodies in this organ, and retention and incontinence of urine are successively considered, but the remarks upon these several subjects call for no special comment. An interesting section is devoted to chorea of the bladder, a rare affection, of which the authors give three illustrative cases, and which they have found amenable to hygienic and general tonic treatment. Three pages are given to the subject of hæmaturia, but no reference is made to Mr. Hilton's interesting lectures upon the aid afforded by examination of the coagula in ascertaining the source of the hemorrhage in these cases. The twelfth chapter terminates with an account of the affection known as neuralgia of the neck of the bladder, for which the authors recommend their favourite remedy—matrimony—with the occasional introduction of a conical steel sound.

¹ It is rather odd that writers who think it necessary to explain that "lithic acid" comes "from the Greek λίθος, a stone" (p. 259), should not have taken the trouble to look up the derivation of exstrophy, when they would, of course, have found its origin to be from στρεφω, *I turn*, and not from τρεφω, *I nourish*.

In Chapter XIII. are considered the important subjects of *Cystitis*, acute and chronic, *Pericystitis*, *Atony*, and *Paralysis of the Bladder*, and various rarer affections, such as tuberculosis and cancerous disease of this organ, and the development of fibrous, cystic, and villous growths. Battey's and Powell's operations of cystotomy for chronic cystitis are mentioned, but no reference is made to Guthrie as the original suggester of this mode of treatment, nor to the early operation of Willard Parker, nor to the more recent instances of its employment, in the female, in the hands of Sims, Bozeman, and Emmet. For simple atony of the bladder the authors recommended injections of cold water, beginning at a temperature of 90° F. and running down as low as 40°.

Chapter XIV., on *Stone in the Bladder*, contains a great deal of valuable information, conveyed in a plain and practical manner, and may be studied with advantage by every practitioner of surgery. In a foot-note to page 272, Dr. Van Buren gives an interesting account of "the first case of lithotomy with anæsthesia." We could wish that all surgeons were impressed with, and would practically act upon, the truth conveyed in the following sentence—a truth which applies as well to other capital operations as to lithotomy:—

"The simple fact that an operation can be done is no reason why it should be done in the face of very serious risk to life; and it is hardly necessary to say that the temptation to perform a capital operation, even at his urgent request, should never weigh for a moment against the best interests of the patient who places his life in our hands."

Some surgeons, however, seem to consider it a point of honour, in every case to do *something*, even if that something should but serve as a "happy despatch" to hurry their patient with redoubled velocity out of the world.

Lithotrity forms the subject of Chapters XV. to XVII. inclusive. The first suggestion of this mode of treating stone is, as usual, attributed to Gruithuisen (or, as his name is here spelled, Gruithausen), but no reference is made to the claim of priority which has been advanced, and, so far as we know, never disproved, on behalf of the Italian surgeons, Santorio and Ciucci. Sir Henry Thompson's statistics are quoted, but the authors seem to be familiar only with his report of 184 cases in the 53d volume of the *Medico-Chirurgical Transactions*, and not with his more recent and more elaborate report of 204 cases in the second edition of his *Practical Lithotomy and Lithotrity*. In speaking of the means employed to assist the evacuation of fragments after lithotrity in cases of atonied bladder, Clover's apparatus is described, but no allusion is made to the ingenious siphon arrangement, employed by Prof. Dittel, of Vienna. In this portion of their volume the authors recur to the subject of urethral or urinary fever; we venture to think that a study of Dr. Dickinson's admirable paper "On disseminated Suppuration of the Kidney," in the last volume (56th) of the *Medico-Chirurgical Transactions*,¹ would render them less emphatic in their denunciation of the "vague opinions" of those who are disposed to look upon this affection as a form of pyæmia.

Chapter XVIII. is devoted to the subject of *Lithotomy*. The authors do not seem to be quite clear as to the relative positions to be assigned to this operation and lithotrity. On page 280 they tell us that the latter "has taken position, not as a rival of lithotomy, but as a new and additional resource, etc.;" but on page 328 they say that lithotomy "is an operation of far less importance than its powerful rival lithotrity;" while

¹ See also No. of this Journal for July, 1873, p. 251.

on page 329 they again change their tone, and declare that "lithotomy still holds its place as one of the grandest operations of surgery, and still has no rival in at least fifty per cent. of all cases of stone, taken collectively, at all ages."

The lateral, median, and supra-pubic, are the only forms of operation described by the authors; this we think an error in judgment, for in a special text-book, such as they have undertaken to furnish, the student reasonably expects to find an account of every mode of proceeding which is not obsolete, and which is advocated by respectable authority. Even were the medio-lateral (Buchanan's), the medio-bilateral, and the pre-rectal operations omitted, at least the ordinary bilateral and recto-vesical operations should have received some attention. The directions given as to the manner of performing the various operations are usually clear and comprehensive, such, indeed, as would be expected from writers who are known as both skilful surgeons and practised teachers. As a matter of personal preference, we are disposed to consider fenestrated forceps, lined with linen, as more generally useful than the heavy bladed forceps which alone are described by the authors, and we think the direction given that the right side of the prostate should be invariably divided whenever the stone is more than one inch in diameter, unnecessarily sweeping, for we feel sure that stones of this size, or even somewhat larger, may, ordinarily, be removed with perfect safety by the single left-sided section. Speaking of the treatment of deep-seated hemorrhage, after the operation of lateral lithotomy, the authors recommend the tying in of a tenaculum, and describe and figure Keith's instrument (with removable handle), but do not mention the name of Physick, as having eighty years ago successfully resorted to this mode of treatment; nor do they make any allusion to the well-known forceps subsequently devised by the same surgeon for the application of a ligature in these cases. Prof. Gross's "artery compressor" is referred to, but no notice is taken of John Bell's advice to secure the bleeding vessel "by laying hold of it with the old artery-forceps and letting them remain for the night."

Chapters XIX. and XX. are devoted respectively to *Diseases of the Ureters* and *Diseases of the Kidney*. Chapter XIX. occupies less than a page, and though rupture of the ureter is alluded to, no notice is taken of the late Mr. Poland's valuable paper on the subject. Chapter XX. is upon the whole well done, but we doubt the wisdom of undertaking the description of what are generally recognized as *medical* affections in a *surgical* text-book; almost all the subjects discussed in this chapter may be found as well if not better treated of in works on practical medicine, and the space which they here occupy might we think have been more profitably occupied with other matters. In the section on *peri-nephritic abscess*, Dr. Bowditch's paper read in 1868 before the Boston Society for Medical Observation, is quoted, but the authors do not seem to have met with Dr. B.'s more recent and much more elaborate memoir published in the Report of the Boston City Hospital, for 1870, while Trousseau's investigations upon the same subject are not even alluded to. *Nephrotomy* for renal calculus is more favourably regarded by the authors than by most surgical writers, and more so, we think, than is justified by recorded experience. The famous case of the archer, quoted by Paré from Monstrelet, which Drs. Van Buren and Keyes seem to look upon as authentic, may, we think, since Velpeau's *tranchant* criticism of it, be dismissed as apocryphal; while of the four cases which have been recorded since Mr. T.

Smith urged the revival of the operation,¹ two terminated fatally, and in the other two no stone was found. Hence, Marchetti's case remains as the only one in which the operation has hitherto proved successful. Half a page is given to *ablation of the kidney*, and Dr. Peters's paper is erroneously referred to as containing "a report of the only cases (three in number) where a similar operation had been performed previous to his own." A reference to the number of this Journal for January, 1873 (p. 278), will show that the number of cases on record is considerably larger than that given by Dr. Peters.

Chapter XXI. is devoted to *Diseases of the Scrotum*. A paragraph is given to the affection known as elephantiasis of this organ, but though it is stated that, in operations for removal of the hypertrophied scrotum, "patients are apt to die on the table, from hemorrhage, which is always excessive," no reference is made to the ingenious plans suggested for the prevention of this accident by O'Ferrall, Fayrer, and other surgeons.

Diseases of the Testicle form the subject of the next four chapters, which upon the whole afford a very satisfactory exposition of the important matters upon which they treat. This review, however, has already extended to such length that we must refrain from examining them with as much minuteness as they deserve. From expressions used on pp. 402 *et seq.*, we infer that the authors hold the view that the cure of hydrocele is invariably effected by the adhesion of the opposing surfaces, and consequent obliteration of the cavity, of the tunica vaginalis; such indeed we believe to be usually the fact, but several cases which have fallen under our own observation have led us to think that Mr. Erichsen is right in declaring that, in some instances at least, obliteration of the cavity is not necessary. We do not approve of the authors' recommendation that, in the treatment by iodine injection, a large quantity of fluid should be thrown in and subsequently withdrawn; we believe, with the late Mr. Syme, that a much surer method is to inject a small quantity of the undiluted tincture (not exceeding three fluidrachms), and to allow it to remain. Epididymitis is well described in this portion of the volume, in connection with orchitis proper (from traumatic causes, etc.), but no reference is made to what we consider the best mode of treatment, viz., puncture of the tunica albuginea, as originally suggested by Petit,² and more recently practised on a large scale by Vidal (de Cassis) and H. Smith. Puncture of the tunica vaginalis is alluded to, but this is a different, and, as we venture to think, a less efficient remedy. The section on tuberculous disease of the testicle is a very good one, but might we think have been still further improved by referring to Salleron's elaborate memoir upon this subject.

Chapter XXVI. is devoted to a consideration of *Maladies Involving the Genital Function*, and is, in our judgment, one of the best, if not the very best, in the whole volume. The delicate questions treated of in this chapter are discussed with modesty, and at the same time in a perfectly practical manner, and the authors' views seem to us decidedly more consonant with reason than those maintained by Mr. Acton in his well-known work *On the Functions and Disorders of the Reproductive Organs*.

Diseases of the Cord (including varicocele) are described in Chapter XXVII., and *Diseases of the Vas Deferens and Seminal Vesicles* in Chap-

¹ The modern literature of nephrotomy is not alluded to by the authors.

² Not PETIT le Grand, but a less famous surgeon who wrote in the early part of the present century.

ter XXVIII. We quite agree with the authors that varicocele, in the large majority of cases, requires merely palliative if any treatment; but we cannot subscribe to the doctrine which they advance that, when more radical measures are needed, "in the vast majority of cases but one operation is allowable, namely cutting off the redundant scrotum." On the contrary, we regard this as more severe than almost any other of the various modes of treatment which have been suggested, and as certainly more so than that of Mr. Henry Lee, which seems to us as little open to objection as any operation of the kind can be.

We have already consumed so much of our allotted space, in noticing the first part of Drs. Van Buren and Keyes's treatise, that we must greatly abbreviate what we should like to say about the second portion, that which treats of Chancroid and Syphilis. This we regret the less, however, because the views which they advance correspond in most respects with those which we have so often maintained in the pages of this Journal, and because there is little indeed in this part of the work to call for criticism.

One or two points, however, we cannot let pass unnoticed. We have already had occasion to comment upon Dr. Keyes's zeal for experimental study upon the bodies of his hospital patients, but we find in a foot-note to page 478 an observation which throws his hypodermic use of urine quite into the shade.

"It has been stated," he tells us, "that chancroid will not take upon a patient suffering at the time from acute febrile disease. To test this point, Dr. Fiset, at the Charity Hospital, at my suggestion undertook some experiments. They were, unfortunately, interrupted after the doctor had inoculated one patient three times upon the thigh, the gentleman in charge of the fever wards being fearful lest syphilis¹ should be introduced among his patients. . . . Two of the punctures took perfectly, although the process of ulceration was very slow. On the thirteenth day, pus from one of these ulcers was inoculated upon a healthy patient, with the effect of producing a characteristic chancroid. The ulcers on the leg of the typhoid patient finally became confounded in a single ulceration two inches in diameter, which was dressed with iodoform, and on the patient's discharge from the hospital, convalescing, after a sojourn of fifty-three days, the ulcer was reduced to a diameter of one inch, and was healing."

But on page 484 the authors declare (and truly) that

"During the whole period of its existence the chancroid furnishes auto-inoculable pus. The old theory, that after repair was well advanced the secretion ceased to be poisonous, is no longer tenable."

Hence this unfortunate fever patient was not only himself endowed with a disease from which he was free when he entered the hospital, but was sent out with a large, unhealed chancroid, ready to contaminate any unwary person with whom he might happen to come in contact. In *Care periculum* may be all very well, but when a chancroid is bestowed for the benefit of science upon an unsuspecting charity patient, he should at least be cured again before he is let loose upon the public.

On page 504, the authors give instructions for the opening of buboes, but neglect to say in what *direction* the incision should be made; this we consider a matter of some importance, believing that the healing process is more quickly accomplished when the incision is made to correspond with the long axis of the patient's body, than when, as is often done, it is made in a line parallel to Poupart's ligament. In the authors' remarks upon

¹ This gentleman could not, apparently, have been sound on the question of the *duality* of venereal sores.—REVIEWER.

the transmission of syphilis by inoculation of secretions, we find no reference to the early observations of Dr. Hammond, nor to those more recently published by Mr. Morgan and Mr. H. Lee. While we quite agree with Drs. Van Buren and Keyes that the initial lesion of syphilis is always a chancre, and that there is no condition to which the name of syphilitic gonorrhœa can with any propriety be applied, we think that the testimony now before the profession renders it unsafe to deny that, as *secondary* lesions, contagious urethral and vaginal discharges may occur in cases in which no ulcerations or abrasions can be detected.

In the *treatment* of syphilis, the authors recommend the use of mercury during the primary stage, in this differing from Dr. Bumstead and others, who postpone specific treatment until the manifestation of secondary phenomena; again the authors recommend that the mercurial course should be continued from six to eighteen months after the disease is apparently cured, while Bumstead suspends treatment within a few weeks after the cessation of all appreciable symptoms. For our own part we see no objection to the cautious use of mercury during the first stage of the disease, and believe that, though its employment may not prevent the occurrence of secondary symptoms, it at least renders them milder; when, however, the secondary stage has been safely gone through with, and the patient is restored to health, we see no advantage in further persistence in treatment, particularly as it is by no means certain that tertiary symptoms will occur in every case, and as, on the other hand, it is very doubtful whether the use of mercury under these circumstances actually exercises any prophylactic influence.

A few words must be said before concluding as to the qualities of the book, as a literary production. In spite of occasional but probably unavoidable repetitions, the authors' arrangement of their matter is convenient, and their style generally clear, concise, and elegant; we have, indeed, noted one or two odd words or expressions, such as *gouts* of mucopus, *pilimiction*, and "the diagnosis is *with*," instead of "the diagnosis is *from*;" moreover, we cannot appreciate that purism which leads the authors invariably to substitute "kidney-stone" for "renal calculus," while at the same time they try to naturalize such detestable barbarisms as "Cowperitis," "peri-cowperitis," and "phimosed." The numerous references in the foot-notes give an air of erudition to the pages of the book, but are in many instances of but doubtful utility; it is bad enough to be referred, as is frequently done, to a single large volume in a foreign language, without any indication of edition, date, or page; but how bald and valueless are such citations as "Guy's Hospital Reports" (p. 318), "Dublin Medical Press" (p. 94), and "Philosophical Transactions" (p. 370). As for the reference to Humphrey's paper on page 346, it is hardly necessary to say that the *Trans. Prov. Med. Assoc.*, for which Humphrey wrote, were the Transactions of the *Provincial*, and not of the *Providence* Medical Association.

The publishers' share in the production of the volume is deserving of all praise. The paper is good, and the printing neat and more than ordinarily accurate, while the illustrations, though not numerous, are usually appropriate and well executed.

In terminating this review we beg to say again that we look upon Drs. Van Buren and Keyes's Treatise as a very valuable contribution to surgical literature. Considering the wide range of the subjects which it embraces—covering, as it does, the same ground as the several works of Sir Henry Thompson, Mr. Curling, Mr. Acton, and Dr. Bumstead—it must be

looked upon as a model of judicious condensation, while at the same time every chapter shows that its authors have not derived their materials from books alone, but from the fertile field of a wide practical experience. If in the preceding pages we have seemed to deal more in criticism than in commendation, it is because the merits of the work are so obvious that he who runs may read; and because we have deemed it necessary to justify the charge which we felt compelled to make at the beginning, that the authors' research into the literature of their subject had been less exhaustive than they seemed disposed to believe. Should these lines fall under the authors' observation, we would venture to express the hope that in a second edition (which we feel sure will ere long be demanded) they will either make the book more exclusively didactic—imparting, as none have a better right to do, their own opinions only, with all the authority to which they are entitled—or else that they will spare no pains to make it in fact, as in design, a complete exposition of the existing state of genito-urinary surgery in all parts of the world. In the latter case we hope moreover that the work will possess, more than it does at present, an *American* character. The book is already such a good one that it would be a great pity if, for want of a little labour, it should not in future editions approach still nearer to perfection.

J. A., JR.

ART. XVIII.—*A Manual of Toxicology, including the consideration of the Nature, Properties, Effects, and Means of Detection of Poisons, more especially in their Medico-legal Relations.* By JOHN J. REESE, M.D., Professor of Medical Jurisprudence and Toxicology, in the University of Pennsylvania, etc. 8vo. pp. 507. Philadelphia: J. B. Lipincott & Co., 1874.

TOXICOLOGY is a subject apt to be slurred or even not taught at all in our medical schools, and thus it comes to be the branch of medicine about which the average practitioner knows least. He has at his tongue's end the duration of a fever, the date when to expect secondary symptoms following a chancre, or the pathology of pneumonia; but if suddenly put on the witness-stand and asked how soon after taking arsenic the metal can be found in the liver; how long after death prussic acid can be detected in a body; or what are the lesions in phosphorus poisoning, he is pretty sure to cut a sorry figure; while of chemical analysis he generally knows nothing. Even in the practical matter of the therapeutics of poisoning, we see a suggestive indication of professional ignorance in the full directions for treating such cases commonly provided so carefully in physicians' diaries to the exclusion of the more usual catalogues of eclipses and tables of postage-rates. Dr. Reese's book should, therefore, be sure of a welcome on our tables, presenting, as it does, the practical essentials of toxicology in a compact and accessible form. The work may be divided, for the purposes of the reviewer, into two parts; the first being the chapters dealing with the general considerations of the science, and the second those occupied with the detailed account of individual poisons.

Dr. Reese begins with a carefully worded definition of a poison, and in view of the keenness of cross-examinations in the witness-box, it is well to have our ideas on this subject accurate.

"A POISON may be defined to be a substance capable of producing noxious and even fatal effects on the system, no matter by what avenue it be introduced; and this, as an ordinary result, in a healthy state of the body, and not by a mechanical action." p. 14.

In this definition the question of *quantity* of the poison required to produce the noxious or fatal effect is very properly not considered, since anything that practically can be introduced into the system in fatal or noxious amount, however large such amount must absolutely be, is plainly as much a poison as one whose fatal dose may be but a fraction of a grain.

Chapters II. and III. are occupied with the general physiological questions involved in the action of poisons, and are similar to the chapters on the same topics that preface the text-books on *materia medica*; embracing the consideration of local and remote action, absorption, elimination, circumstances modifying action, etc. In connection with the subject of absorption there is an important toxicological point so certain to come up in medico-legal cases, and so apt to be carelessly misconceived, that our author very wisely lays great stress on it in several places. It is simply that in fatal poisoning by agents that act only after absorption, it is not what is found in the *stomach* that caused death, but what, before death, had passed *out* of the stomach *into* the blood and thence to the organs and tissues. Strange to say, it is not uncommon to hear physicians wisely declare that unless a fatal dose of a poison can be actually found in a dead man's stomach, there is no reason to assume that death was from that cause. And on the witness-stand the expert is almost sure to be asked if he found "enough of the poison in the stomach to have caused death." The fallacy is self-evident upon a moment's thought. Considering the disposition of poisons after absorption, Dr. Reese says:—

"After the poison has entered the circulation, it may either be rapidly eliminated by the different emunctories, especially by the kidney, or it may be temporarily deposited in the organs and tissues of the body, and usually in the following order as to quantity: the liver, spleen, kidneys, heart, lungs, brain, and pancreas. Experiment has shown that only a minute quantity of the poison is circulating in the blood *at any one time*; the effort of the system evidently being to get rid of it as rapidly as possible. Moreover, there is good reason to believe that the poison is active *only while circulating in the capillary bloodvessels*: while still in the stomach, or after separation from the blood by the emunctories, or when deposited in the solid tissues, it is believed to be entirely harmless." p. 26; the italics are the author's.

To much of this we must demur. In the first place, elimination and temporary deposition in the organs and tissues are given as the only "dispositions" of a poison after it has gained entry to the blood. Surely it must be by inadvertence that a third important disposition is omitted mention, namely, chemical transformation while in the system; an effect which with many organic substances, as alcohol, morphia, etc., may even amount to permanent destruction of a great bulk of the poison as such. To the statement that there is, generally speaking, an evident effort of the system to rid itself of a poison as rapidly as possible, we cannot subscribe. Such is, we know, the common idea, and from what is thus assumed to take place in artificial poisoning, the analogous belief is held that many diseases are but attempts of "nature" to do the same thing with the subtle poisons unwittingly received from the marsh or the cess-pool. The question is one of great interest and importance, as the assumption of a natural eliminative tendency is sure to affect our treatment both of poisoning and disease. We believe it, however, to be a fallacy, and that careful analysis

of facts shows nothing looking like an intelligent endeavour of "nature" to cast out peccant substances, but that innocent and noxious agents alike are dealt with in the system strictly according to their physical and chemical properties, regardless of consequences to the health of the system at large. Elimination, chemical decomposition, or temporary fixing in the tissues thus follow blindly in accordance with general chemico-physiological laws. To suppose otherwise, is to assume the existence in each living body of a quasi-intelligent principle capable of knowingly setting up vital processes for an ulterior purpose in the interests of the general health. Such an assumption would be a revival of the old "Archæus," and is wholly opposed to facts. Take the case of alcohol: even in poisonous dose the elimination is now known to be trifling, and no more than must occur with any substance present in the blood in large quantity. The vast bulk of the alcohol is gradually dealt with strictly according to its chemical nature of an easily oxidized hydrocarbon, and, strange to say, the tissues that hold the poison unchanged the longest, and are the last to yield their absorbed portion to the venom-destroying process of oxidation, are the very nervous tissues themselves, which are the most poisoned of all by the substance in question. So that here, instead of an effort of nature to rid herself of a poison by elimination or otherwise, we have a veritable picture of her hugging the deadly asp most desperately to her bosom. But the matter is too vast to be discussed here, and we must refer the reader to the interesting papers of Dr. Anstie on the subject, by which the present remarks were suggested.¹

Dr. Reese's statement that "there is good reason to believe that poisons are active only while circulating in the capillary bloodvessels," surely cannot be meant to bear strict interpretation. If a poison act only while in the blood, it must logically produce its effect only by modifying either the blood or the circulation. That many do so act is of course true, but equally true is it, in all human probability, that others act, in part at least, by direct impression of the tissues; an action that must take place, of course, after the poison has got *out* of the blood and *into* the tissues. Is there any reason for not supposing that much of the profound nervous disturbance caused by ether, chloroform, or alcohol, is by actual soakage of the nerve-substance with these highly diffusible substances, instead of being purely a secondary consequence of an altered blood or blood-supply? Indeed Dr. Reese seems to think so himself, as in speaking again of the *modus operandi* of poisons, he says:—

"Liebig's theory (at least with respect to the action of the poisonous alkalis) was that they entered into chemical combination with the nerve-substance; morphia, with brain-substance, for instance; and thus the quality of the nervous matter being altered, it became unfitted to support life. Another theory is that poisons act by destroying the vitality of the blood. But as is justly remarked by Prof. Taylor, this destruction of the vital properties of the blood does not explain the specific differences of poisons, seeing that they do not act all alike.

"As regards any actual alteration *in the blood itself*,—either chemical or physical,—nothing has been yet satisfactorily demonstrated, except occasional changes in its colour, consistence, and coagulability. Microscopic observation has failed to show any alteration in the appearance of the blood-corpuscles that can be regarded as conclusive." p. 33.

Chapter IV. is short, but important, dealing with the question of the *post-mortem* imbibition of poisons, which is thus put:—

¹ The Practitioner, vol. viii. pp. 161, 356, and vol. ix. p. 84.

"Is it possible for a dead body to imbibe a poisonous substance from the soil in which it has been interred? and is it possible that a poison introduced into the stomach or the rectum, or by the hypodermic method, after death, should pass through the tissues by imbibition into other viscera of the body, so as to give rise to the suspicion of poisoning, when in reality the death had resulted from a different cause?" p. 38.

Practically the first proposition concerns only arsenic, and it is shown by clear reasoning and by direct experiment that as a matter of fact impregnation from arsenical soil does not occur. As regards the second question, a *partial post-mortem* imbibition of a poisonous substance from the stomach to contiguous parts may undoubtedly take place, but in such case a diagnostic circumstance would be the inevitable finding of the substance in greatest quantity in the parts immediately adjoining the site of introduction, and in the outer rather than inner portion of organs so impregnated. In this connection the effects of a possible *post-mortem introduction* of a poison are discussed, and diagnostic rules given.

Chapter V. deals with the medico-legal bearing of the various evidences of poisoning, including rules and warnings to the expert how to make his examinations as free as possible from every *conceivable* source of error. And to one who has never followed a case through the courts such rules are most timely; for nothing is more likely to happen to the beginner than the utter spoiling of what may be morally sure evidence by the careless failure to weld some one little link in the chain of rigid legal requirements. In his analysis of the weight of the different kinds of evidence our author is exceedingly cautious, and we heartily commend his conclusions, especially to the glibly-swearing class of medical witnesses. Thus, on the one hand, neither symptoms, *post-mortem* appearances, nor even finding of a poison somewhere in the body, can, *taken singly*, make out, with complete certainty, a death by poisoning; while, on the other hand, the non-production of the characteristic symptoms, lesions, or even the failure to find any of the poison in the body, does not necessarily in all cases break down the prosecution. We especially commend the following statement, with which we entirely concur: "no medico-legal case of poisoning can possibly be established by symptoms alone, for the reason that there are no *characteristic* symptoms of any single poison." p. 46.

Chapter VI. treats of "compound poisoning" and the possibility of the symptoms of a poison being masked or its effects modified by the simultaneous giving of another. In this connection Dr. Reese briefly gives the results of his own experiments to determine the compound effect of the more commonly used poisons.

Chapter VII. gives in detail the systematic method of chemical procedure to be pursued in a case of suspected poisoning, and Chapter VIII. reviews briefly the medico-legal questions connected with poisoning, as developed in the foregoing portion of the book.

Chapter IX. is on the *Duties and Privileges of Medical Experts*, and its subject matter is one with which every medical man should be familiar, as there is no one in the profession who may not be called upon to testify as an expert. Dr. Reese bewails—as who does not?—the wretched system by which any ignoramus, under the garb of "doctor" or "professor," may be foisted upon a court as an "expert," when his only qualifications may be that for three years he spent some of his spare time on the back benches of a medical college-amphitheatre, or that he once washed bottles in some chemist's laboratory. We confess we never could see why questions of science affecting the issue in a trial were not exactly analogous

to questions of law similarly involved, and why therefore they should not be dealt with in the same way. If a disputed point be about a matter of physiology, as whether a man died from a half dozen bullet-holes through his intestines or from morphia, the jury, themselves utterly ignorant of the subject, are allowed to decide any way they please, after listening, for guidance, to an indefinite number of irresponsible opinions from "experts," all tacitly assumed of equal weight, because forsooth the diplomas of the witnesses are all of equal length and breadth of sheepskin. But let the disputed point be one of *law*, a subject of which the jury is also ignorant, and the procedure is very different. An officer called a *judge*, designed to be selected for proven capacity and experience, is appointed to give the jury *his* decision in the matter, and by that they must abide; while to provide against his mistakes there are other, higher tribunals of similarly appointed experts, to whom an aggrieved party may appeal. Why not let questions of law be settled like those of physiology? Thus when a legal point arises in course of a trial, let counsel summon any curb-stone "attorney and counsellor-at-law," who after interviewing is found to hold the desired opinion, and, calling him a legal "expert," parade his professional lucubrations as conclusive of the knotty point. Then, after hearing a dozen such witnesses on each side, let the jury settle the matter to suit themselves, and the prisoner go hang on the wisdom of their decision. In Germany, it seems, a very different system prevails. Dr. Reese says:—

"In Germany it is, fortunately, otherwise. In criminal cases, the experts first summoned are exclusively those whom the State, after proper examination of their competency and skill in such particular inquiries, has duly authorized to act for this purpose; while in addition to this, there is organized a tribunal of experts, to which the opinions of expert witnesses can be referred." p. 12*.

A question quite important for a medical man to know is "whether an 'expert' witness is obliged to obey the process of a subpoena, like any ordinary witness, and testify in a given case *as to his opinion*, without a previous guarantee of an adequate pecuniary compensation." p. 123. Dr. Reese tells us that the law can compel any one to appear before any court in his own state, on service of a subpoena, though there are dissentient opinions of lawyers and judges on record as regards obliging a person to testify to a scientific opinion merely. We have always thought the law forcing the attendance of an expert as much a violation of personal liberty as would be one compelling a lawyer to accept an appointment to the bench, whether he would or not, but that is neither here nor there. In the matter of securing *pay* for professional services rendered to the state or the defence, we heartily agree with our author that the expert has the moral right to ample compensation, and should look to securing it with a sharp business eye, as experience shows a strong likelihood of his being outrageously cheated if he doesn't.

Chapter X. begins the systematic part of the work, and considers the classification of poisons. Here Dr. Reese very properly adopts the physiological instead of the naturo-historical basis of classification. No one who has not been kept awake at night by trying his own hand at it, knows the insurmountable obstacles in the way of classifying, by their action, medicines or poisons; and none such, therefore, will find fault with our author for saying that his arrangement "is, to a great extent, an arbitrary one, and necessarily imperfect." It is as follows:—

Table of Classification.

CLASS I. Irritants.	Order 1. Irritants proper.	Mineral.	{ Non-metallic. Metallic.
	Order 2. Irritants producing remote specific effects.	Vegetable. Animal.	
	Order 1. Cerebral.	Narcotics. Anæsthetics.	
CLASS II. Neurotics.	Order 2. Spinal, or Tetanics.		
	Order 3. Cerebro-spinal.	Deliriants.	
		Depressants. Asthenics.	(p. 134.)

The remaining chapters, which, of course, make up the bulk of the volume, are devoted to the detailed account of individual poisons. The plan followed is to give for each the essentials of its natural history, the symptoms of poisoning, fatal dose and period, therapeutics, lesions, and chemical analysis. We shall not attempt to follow the author through all these details; and, in a book of this character, which deals far more with well-ascertained facts than with opinions, there is really but little matter for an extended review. In general, the topics are treated of in a purely practical manner, the volume being a working handbook for the toxicologist; and as the latter is most concerned with the chemical detection of poisons, this branch of the subject is the one most fully presented, and is, indeed, very thoroughly done. In his symptomatology we do not think our author is so happy. Many of the descriptions are very meagre, and consisting merely of a bald enumeration of the functions disturbed, fail to present a vivid picture of the condition of the sufferer. Neither is the natural *sequence* of the symptoms always properly indicated, nor care taken to point out the usual from the exceptional effects. As an illustration, take the following account of belladonna-poisoning:—

“The symptoms are as follows: A sense of heat, and extreme dryness of the mouth and throat, with difficulty of swallowing, nausea, vomiting, giddiness, impaired vision, a flushed face, sparkling eyes, delirium of an excited maniacal character, spectral illusions, convulsions, followed by stupor and coma. The pupils are extremely dilated, and insensible to light. Cases have been reported where the pupils were contracted during sleep, but dilated in the waking state. Irritation of the urinary organs is not uncommon, such as strangury, suppression of urine, and hæmaturia. A scarlet eruption on the skin, resembling that of scarlatina, is frequently observed. The *delirium* is of a peculiar character. The illusions are sometimes pleasing, exciting violent laughter; at other times they produce furious actions. There is loss of consciousness. The symptoms generally manifest themselves within one or two hours after swallowing the poison; but in poisoning from the berries they may be delayed for several hours. In cases of recovery the symptoms are sometimes very long in disappearing.

“The following case is quoted from the *New York Journal of Medicine*, vol. viii. p. 284: ‘A man ate a pie made with the berries of belladonna and apples. A few minutes afterwards he complained of feeling drowsy; the lethargy soon increased; his countenance changed colour; the pupils became dilated, and he experienced a coppery taste in the mouth. On going up stairs he staggered, and, upon entering the room, he fell, and became insensible. He subsequently became delirious and convulsed, and died the following morning. A child, to whom a portion of the pie had been given, died on the same day.’

“The following instance of recovery is related by Dr. Gray (*N. Y. Journ. of Med.*, Sept. 1845, p. 182): A child between three and four years of age swallowed from eight to twelve grains of the extract of belladonna. About half an hour afterwards the expression of the patient was that of terror; the pupils were widely dilated, and immovable; the conjunctiva highly injected, and the whole eye prominent and very brilliant. The face, upper extremities, and trunk of the body exhibited a diffused scarlet appearance, studded with numerous papillæ, like the rash of scarlatina. The skin was hot and dry; pulse

increased in force and frequency; respiration anxious and stridulous. There was a constant but unsuccessful attempt at deglutition, with spasmodic action of the muscles of the throat and pharynx; and paroxysms of violent motion, with rapid, automatic movements, attended with convulsive laughter. Under the action of an emetic the alarming symptoms passed off in about three hours, and the child recovered, with the exception of a moderate diarrhœa, and a slight enlargement of the pupil." pp. 436-38.

Here the only real *description* of belladonna-poisoning is the narration of the second individual case. In the general account, where we naturally look for a systematic analysis of the effects of the poison, we have only a list of symptoms put together without order, and with no clue as to which are the more characteristic—which, that is, we should find even in slight poisoning, and which, on the other hand, only occur in severe or fatal cases. Vomiting and convulsions—unusual effects—are put in the same category with dilatation of the pupil and dryness of the throat and mouth—affections perfectly certain to occur if the system be at all poisoned; while the earliest, and one of the most characteristic symptoms, acceleration of the pulse, is not mentioned at all. And, on the whole, we think the reader will agree with us, that one who had never seen a case of belladonna-poisoning could hardly form, from the foregoing description, a clear mental picture of the rise and progress of the symptoms, of the condition of the sufferer at any one stage of the poisoning, or of how he would be affected by different amounts of the drug.

The following is the account of chronic iodine-poisoning:—

"In chronic poisoning (*iodism*) produced by the prolonged employment of iodine in medicinal doses, or by its external application, the symptoms are vomiting and purging, tremors, palpitation, pain in the stomach, cramps, salivation, general emaciation, and gradual absorption of certain glands of the body, particularly the mammæ of females, and the testes of males: there is usually an increase of most of the secretions, and enlargement and tenderness of the liver. All of these symptoms are not generally present in every case of iodism, but they have been produced by small doses administered for a few days at a time." p. 210.

Here the very unusual effect—if, indeed, it occur at all—of atrophy of the breasts or testicles, is given among the more ordinary symptoms without a word of comment upon its rarity; and if we strike this out, the remainder of the description, so far as it goes, would apply almost as well to the poisoning by mercury as to that by iodine.

In speaking of poisoning by putrescent food, Dr. Reese surprises us by the following statement:—

"It is well known that the putrid animal matter of the dissecting-room, entering the blood through an abrasion of the skin, causes the most alarming symptoms, which often terminate fatally. There is extensive local inflammation of the veins and absorbents, together with diffusive cellular inflammation, and great constitutional fever of a low character." p. 359.

Here one would be led to infer that a dissection-wound almost inevitably produces grave or even fatal poisoning; whereas, as every medical student knows, such effects are exceedingly rare. Neither, in the ordinary sense of the word, is *putrid* animal matter the most virulent; poisoning being more apt to occur in autopsies on freshly dead bodies, than where decomposition has actually begun.

We make these various comments not in any carping spirit, but to furnish the reader with some vouchers for our opinion that the descriptions of poisoning in this otherwise good book will bear some revision and improvement.

But little attempt is made to analyze the nature of the physiological action of the "neurotic" poisons, an omission which, while saving many long and fruitless discussions, yet often deprives the student of the key to the understanding of the symptoms.

The sections on therapeutics are brief, but the latest discoveries in the line of treatment of poisonings are carefully given. We note one or two omissions—perhaps intentional—as the practical value of the antidotes is not yet clinically established. Such are Bamberger's copper antidote to phosphorus, the ethyl and methyl compounds of strychnia as antidotes to strychnia itself, and the use of hypodermic injections of atropia in hydrocyanic acid poisoning. One naturally turns to find what so careful an author says about the physiological antagonism of morphia and atropia; and considering the vast importance of the subject, from the frequency of opium-poisoning, we confess to a little disappointment at the fruits of our search. Dr. Reese is content to waive an analysis of the question, and merely state generally that "atropia is now generally regarded as a true physiological antidote to opium" "we cannot withhold our conviction that they are antidotal to each other in man." pp. 370, 371. Of course, we cannot discuss this much vexed question here, but we must say that since Dr. Reese's book is so likely to become a text-book for the beginner, we think he should have gone somewhat more into detail here, and have shown the reader just in what the antagonism would appear to consist. As it is, one who did not know might readily gather the vague and false idea that these two most complex-acting substances produce effects that in all respects nullify each other. In practice Dr. Reese directs in opium-poisoning that atropia "be carefully administered in successive doses until the pupils begin to dilate, and the breathing becomes increased in frequency" (p. 371); and in stramonium-poisoning that morphia, hypodermically, "be persevered in until its effects are manifested by the contraction of the pupils." (p. 446.) Our own opinion is, that the effect on the pupils is a bad, and even dangerous guide by which to regulate the use and dose of either alkaloid, especially in the case of morphia against atropia, and we cannot but regard the directions in stramonium-poisoning, just quoted, as highly unsafe.

As we have already said, the chemical part of the work is that to which the author has given most space. Here his directions are very full and explicit, and furnish an excellent practical guide to the toxicologist. The subject of spectrum-analysis is not treated of at all. In making this announcement in the preface Dr. Reese says:—

"The subject of *spectrum-analysis* has not been treated of in the present volume. This truly beautiful method of analytical research has developed the most wonderful results both in chemistry and in other departments of science. In point of delicacy, it far transcends the most subtle and refined chemical reactions; and, as a corroborative means of evidence, it will doubtless prove of great value to the toxicologist. But as it deals, so to speak, with infinitesimals, we do not think it would be safe, in a case of alleged poisoning, to rest the evidence solely upon the spectral demonstration of the supposed toxic agent, to the exclusion of the recognized *chemical* tests. When an accumulated experience with spectral analysis has rendered the identification of the various poisons absolutely and *exclusively* certain, we can probably afford to abandon altogether the more tedious and complex methods of chemical research." p. ix.

Considering how careful Dr. Reese has been to confine himself to practical matters, the omission of the subject of spectrum-analysis is not at variance with the general scheme of the work.

E. C.

ART. XIX.—*A Treatise on Therapeutics, comprising Materia Medica and Toxicology, with especial reference to the application of the physiological action of drugs to clinical medicine.* By H. C. WOOD, JR., M.D., Professor of Botany and Clinical Lecturer on Diseases of the Nervous System in the Medical Department of the University of Pennsylvania, etc. 8vo. pp. 578. Philadelphia: J. B. Lippincott & Co., 1874.

THE progress of medicine, from the blind guessing of empiricism towards the goal, still far distant but not undiscernible, of scientific certainty, can nowhere be traced with greater ease or interest than in the treatises on materia medica and therapeutics which have appeared, with their offers of healing for the nations, in countless numbers, from the time that Nechepsus, six hundred and thirty years before Christ, wrote that "a green jasper, cut into the form of a dragon surrounded with rays, if applied externally, would strengthen the stomach and organs of digestion," to the appearance of the treatise before us. The materia medica of Galen, in which, according to his celebrated hypothesis, the properties of all medicines are stated to depend upon their four *cardinal* qualities, heat, cold, moisture, and dryness, and in which medicines are advised for the treatment of diseases in proportion as the latter are hot, cold, moist, or dry, reflected the speculative character of the therapeutics of his age. The materia medica of Paracelsus, with its extraordinary doctrine of signatures, was an apt illustration and natural outgrowth of mediæval medicine. Nicholas Culpeper's Physicians' Library, with its prefatory "Astrologo-Physical Discourse of the Humane Virtues in the Body of Man," and its description of the "roots, herbs, seeds, living creatures, stones, tears, barks, fruits, spirits, physical wines, excrements, oyls, oyntments, minerals, plasters," etc., mirrored the absurd conceits and strange hypotheses of the therapeutics of the seventeenth century. Jonathan Pereira's Elements of Materia Medica and Therapeutics, a magnificent monument of human industry and learning, indicate perhaps more vividly than any other work the great advance which the medicine of the first part of the nineteenth century made over its predecessors, but they also show how little scientific accuracy there was in the application of drugs to the treatment of disease during the same period. Dr. H. C. Wood's Treatise on Therapeutics, Materia Medica, and Toxicology (which has just appeared), indicates the physiological direction that recent therapeutical study has taken, and fairly presents the acquisitions that therapeutics has made in following out its chosen path.

Dr. Wood's Treatise is a handsome, large octavo volume, of five hundred and seventy-eight pages, dedicated to his uncle, the venerable Dr. George B. Wood, whose name is so honourably associated with American medicine. It is, as stated by the author in his preface, an attempt to present to the medical profession

"A book into which should be gathered the many scattered facts in regard to the physiological action of medicine—a book in which an attempt should be made to sift the true from the false, to reconcile seeming differences, to point out what we know and what we do not know, and to give a platform from which investigators might start forward without the necessity of being, as is so often the case, ignorant of what was already achieved, or of spending a great deal of time in a wild hunt through the almost boundless, but often scattered and inaccessible ranges of Continental literature."

The book commences with a brief introduction, in which pharmacy, the

United States Pharmacopœia, modes of administering drugs, influences that modify the action of remedies, and rules for doses are referred to, and a classification of the *materia medica* presented. The latter, which Dr. Wood properly styles only "a convenient row of pegs upon which to hang our ideas and facts," is substantially a physiological one. By it, remedies are arranged in three large divisions: *First*, general remedies, such as astringents, tonics, cardiac stimulants, etc.; *second*, local remedies, such as emetics, cathartics, diuretics, etc.; and *third*, substances which act externally to the body, as antacids, anthelmintics, etc. The names of some of the classes of these divisions are themselves hints of the new direction that the study of the *materia medica* has taken. Analgesics, mydriatics, anæsthetics, depresso-motors, oxytocics, and digestants would have been unintelligible terms to Culpeper, and possibly some of them to the philosophic Donald Monro. The chief part of the book is, of course, devoted to a description and discussion of the various agents of our present *materia medica*. It should be mentioned that drugs alone are included in this description. Climate, occupation, exercise, mind, electricity, food are only incidentally referred to by Dr. Wood, not described as remedial agents.

It adds to the value of the work, that it is not encumbered with needless learning. Very little is said about the history of the drugs that are described. Students who desire to learn the pedigree and biography of the drugs they use, or to be informed concerning the various transformations that drugs have undergone from the time of *Æsculapius* till now, will find little to satisfy them in the treatise that is before us. In like manner, very little is said about the botanical characteristics or chemical properties of drugs. The reader is properly permitted to gather this sort of information from professed works on botany and chemistry. And so with regard to pharmacy, the importance of pharmaceutical manipulations is recognized, but they are not described. This plan, which excludes the history, botany, chemistry, and pharmacy of the *materia medica* from discussion and consequently brings the reader directly without preface to a study of the physiological action of each drug, is one of the best features of Dr. Wood's book. The medical student and practitioner desire to get at the preparations they are to employ at the bedside as directly as they can, and to be introduced with the least possible ceremony to their physiological action and therapeutical use. This course Dr. Wood has steadily pursued.

Another excellent feature of the book is the space that is allotted to describing the physiological action of drugs. Too little attention has been paid, hitherto, to this fundamental part of the *materia medica*. Eleven pages, for example, are given to an analysis of the physiological action of the sulphate of quinia, and less than half that number of pages to an account of its therapeutical application. The latter is a corollary from the former, and can be stated in a few words, if the physiological is well made out and clearly stated. All the important drugs, such as opium, belladonna, digitalis, alcohol, aconite, etc., are discussed in a similar way, that is, first physiologically and then therapeutically.

It would be impossible or difficult to estimate accurately the amount of labour that observers in Europe and this country have spent during the last twenty or twenty-five years in their efforts to solve the problem of the physiological force of drugs and to ascertain the mechanism of their therapeutical action. Physiologists have endeavoured to trace with absolute certainty the time and rate and mode of the entrance of drugs into, and diffusion

through, and departure from the organism; and to learn the exact phenomena that attend every step and stage of the process of drugs from the moment of entrance to the last moment of elimination, transformation, or destruction. The record of all this work is to be found chiefly in the medical journals of Europe and America, and in the various monographs upon drugs that have appeared on both sides of the Atlantic within the last quarter of a century, and especially within the last two decades. We know of no book in the English language which has collected so thoroughly the best work in this direction of the last twenty years and arranged it so well. While it is not exhaustive in this way, it contains the best that has been done and leaves out very little of value. The *Practical Therapeutics* of Dr. Edward John Waring, which was republished in this country seven or eight years ago, we have hitherto regarded as the best treatise of the sort accessible to the English reader, but the physiological portion of Dr Wood's work is much fuller and more complete than that of his transatlantic colleague. Those who are familiar with German medicine will be reminded by the book before us of Nothnagel's recent treatise rather than of any English or American writer on *materia medica*.

It is not to be expected in a treatise of this sort that all portions of it would be of equal excellence. Some parts must necessarily be fuller and more exact than others. Such is the case with the work before us. Notwithstanding this, it may be justly said of it that while none of its articles are poor, some of them are not only good, but are admirable illustrations of physiological and therapeutical description. The articles on *Belladonna*, *Digitalis*, *Aconite*, *Alcohol*, *Opium*, and *Indian Hemp* may be mentioned in confirmation of this remark. They give in clear and distinct language excellent accounts of what has been ascertained up to the present time with regard to the physiological action and therapeutical use of these drugs. Our author's statement of the comparative value as anæsthetics of sulphuric ether and chloroform presents the anæsthetic merits and demerits of these two agents with judicial fairness. It deserves attention on both sides of the Atlantic. With regard to the first, he says:—

“As an anæsthetic, ether does not act with the rapidity and pleasantness of chloroform, but it has the advantage of safety. So dangerous is chloroform, and so safe is ether, that there is no excuse for the use of the former agent under ordinary circumstances. The reason of the safety of ether is that, unlike chloroform, it never suddenly paralyzes the heart. It may kill by inducing asphyxia, but it does so slowly, and in the great majority of cases after warnings which can be overlooked only through the most reckless carelessness.” p. 245.

With regard to chloroform, he remarks:—

“As an anæsthetic chloroform possesses the advantages of quickness and pleasantness of operation, smallness of dose, and cheapness. These advantages are, however, so outbalanced by the dangers which attend its use, that its employment under ordinary circumstances is unjustifiable. It kills without warning, so suddenly that no forethought, or skill, or care can guard against the fatal result. It kills the robust, the weak, the well, the diseased alike, and the previous safe passage through one or more inhalations is no guarantee against its lethal action. Statistics seem to indicate a mortality of about one in three thousand inhalations, and hundreds of utterly unnecessary deaths have now been produced by the extraordinary persistence in its use by a portion of the profession. It ought, therefore, never to be employed except under especial circumstances, as in some cases of *puerperal eclampsia*, when a speedy action

is desired, or in the field during war-time, when the bulkier anæsthetics cannot be transported." p. 251.

The solution of the problem of the proper use of alcoholic liquids must and will be finally made by the physiologist and physician, and it is the duty of the medical profession to enlighten the public upon this grave matter of therapeutics, morals, and sanitary science to the extent of their knowledge and ability. Dr. Wood's statement of the value and use of alcohol is not less important to the reformer than to the physician, and few physiologists will be found to deny its correctness.

"From what has been said," he remarks, "it is certainly deducible that alcohol in small amount is an *arterial* and *cerebral stimulant*, increasing functional activity in the nervous and circulatory apparatus; is a *food*, in the sense that it is destroyed in the system, and there performs a physiological office; is, when in sufficient quantity, a retarder of tissue changes, because it lowers animal heat independently of any action on the nervous system, and also probably checks the excretion of carbonic acid and of nitrogen. . . . If alcohol be oxidized in the body, and be a food, as it seems to me is clearly proven, it must of course generate force, measurable by the modern standard of the heat-unit. A little calculation will show the importance, or rather the great amount, of the generated force. According to Dupré one gramme of alcohol oxidized in the body evolves 7184 units of heat, whilst the same weight of lean beef gives off only 1482 units of heat. It has been estimated that 9.3 ounces of lean beef, equal to about two ounces of alcohol, will supply the necessary force to maintain the circulation and respiration of an average man for one day. That is, four ounces of strong spirit will suffice for this purpose. Since, to the ability of furnishing material whose consumption shall give power is added the ability to restrict waste and to stimulate the functions of circulation and of the nervous system, it is evident that in alcohol we have a most important means of sustaining the system during the strain of an acute exhausting disease." p. 109.

The therapeutic deductions which follow from these actions of alcohol on the human system are obvious, and need not be quoted; and it should be added that the moral and sanitary deductions are not less obvious nor less important than the therapeutic ones. When those who advocate the daily use of spirits, wines, etc. are wise enough to recognize the tremendous evils that alcohol inflicts, and those who advocate its prohibition and extermination are wise and broad enough to recognize the good it is capable of doing and has done, we may hope for a better public sentiment upon the vexed question of alcohol, and for wiser legislation with regard to it.

During our reading of Dr. Wood's treatise we had marked several other articles than those we have mentioned for comment and some for criticism and dissent, but the length which this notice has attained forbids any allusion to them. It only remains for us to refer the reader to the book itself, with the assurance that he will find it a most valuable addition to his medical library. It is a sort of work on *materia medica* and therapeutics that has been long needed both by the practitioner and student, and we congratulate the author upon his success in carrying out a most difficult undertaking. Only those who have worked among the tangled heaps of wheat and weeds that encumber the therapeutics even of the last half century, and tried to sift the grain from the chaff, can appreciate the difficulty of producing a work like the one before us.

We ought not to forget to add, in conclusion, that the typographical execution of the volume is excellent, and creditable to the house that issued it.

E. H. C.

ART. XX.—*The Principles and Practice of Medical Jurisprudence.*

By ALFRED SWAINE TAYLOR, M.D., F.R.S., Lecturer on Medical Jurisprudence in Guy's Hospital. Second edition. 2 vols. 8vo., pp. xvi., 723, xii., 672. Philadelphia: Henry C. Lea, 1873.

THE author of these volumes has been so long and favourably known as an authority on the subjects of which they treat that we gladly welcome them as representatives of his matured experience. Dr. Taylor is best known to American readers by his *Manual*, which has passed through many editions under the care of no less than three editors in this country, yet we cannot but regard with pleasure the fact that there should be sufficient demand for the larger work to justify its importation at this time, hoping that it may be an omen of a diminishing taste for bare abstracts, and of an increasing relish for comprehensive treatises, as thorough scientific acquirements are but little advanced by manuals, which enable us to know a little of everything, and have a smattering of many branches of knowledge. We propose to draw attention to some points in this work which have interested us, and which have a bearing upon the duties of general practitioners, without attempting to present an epitome of volumes so exhaustive in their character.

We are met at the outset by the subject of medical evidence, than which none more disturbs the mind of the physician when called to the witness stand, or more excites his interest as a mere scientist, anxious for the progress of legal medicine. It is also one which is justly regarded by the public as of much importance, and yet one which, from the laxity of rules which govern it, or want of system observed in their application, bids fair to be eventually viewed by the community with unmixed and merited contempt. Dr. Taylor devotes two chapters to the subject, discussing it with sufficient fulness and precision; his conclusions being especially worthy of consideration, coming, as they do, from one whose experience in the English courts has been so varied and extensive. He speaks of medical men appearing as simple witnesses of facts which have occurred in the course of their ordinary business; as medical experts, either in obscure cases where, the interpretation of the facts being disputed, their especial skill, founded upon experience, is expected to shed light upon the legal puzzle; or in the somewhat invidious position of medical counsel. Of ordinary medical witnesses it is sufficient to say that their testimony is subject to the ordinary rules of evidence, and will necessarily partake of the character of those who give it, and that they will best provide for their own comfort, and further the ends of justice, who aim only at telling the truth, testifying that they have seen with as small an admixture of mere theory or personal opinions as practicable, remembering that the more observant and accurate a man is the more valuable will his testimony be. When we consider the position of medical experts, however, the question is very different, and beset with difficulties. In this country and England, either prosecution or defence is at liberty to call any doctor, and dub him expert for the occasion, without much reference to his previous record or special fitness. As a consequence, the whole local profession, if necessary, is submitted to a process of filtration until some one is found who holds the views required by the exigencies of the attorneys. By such means diametrically conflicting testimony is surely obtained, and the administration of justice is dis-

graced by vindictive and even personal contests between the so-called experts. To apply a remedy to this state of things is difficult in a country where the centralization of the government is not sufficient to permit of the adoption of the excellent system in force in some of the German States. In Prussia all disputed medico-legal questions are submitted to a governmental medical bureau, which is so arranged that each judicial district has its legal surgeon, physician, and chemist. Should an appeal be made to a higher court there is a correspondingly higher medical tribunal, before which the case comes, and from the highest there is no appeal. These officers receive very moderate salaries, and occupy the responsible position of judges of medical facts, being presumed to be beyond corruption or interest. In view of the difficulties which would be likely to attend the attempt to introduce so decided a reform, Dr. Taylor proposes that the judge before whom a disputed medico-legal case comes should have the power and responsibility of appointing the expert; or that either side, should they be unable to unite upon one, should each select one, who together might agree upon a third, as in an ordinary arbitration, who might decide any questions submitted to them by the judge, and, as assessors, give a proper estimate of the value of the medical testimony.

Chapter III. treats of questions concerning the dead body, and gives the signs of death, enumerating as such, cessation of respiration and circulation, cooling of the body, and cadaveric rigidity. Under the last-mentioned head will be found much of physiological interest. The investigations of Brown-Séquard are detailed, and his conclusions given as follows: The greater the degree of muscular irritability remaining at the time of death, the later cadaveric rigidity sets in, and the longer it lasts. It would also appear from the observations of the same gentleman that the later putrefaction begins, the more slowly it progresses. After showing that muscular spasm may pass into *post-mortem* rigor, and narrating some old, though interesting cases, Dr. Taylor goes on to speak of the reality of death, carefully sifting the statements which have been made about premature interment. While he justly criticizes those authors who have made this subject so great a bugbear, stigmatizing them as terrorists, he yet thinks it would be well to pass a law prohibiting the burial of a body without the certificate of a physician who has seen it at least twenty-four hours after the time of apparent death, and such a measure he thinks would be much more satisfactory than attempting to provide the ignorant public with some so-called infallible sign by which to decide the fact of death. A recent case, and one which is apparently veritable, is given on page 77, which we here transcribe with Dr. Taylor's comments:—

“Near Morlaix, in France, a woman died, as it was supposed, from cholera. She was seen while ill by a medical man, but not after the supposed death. She was placed in a coffin in an hour, and buried in sixteen hours. During the interment a noise was heard in the coffin. Time was lost in sending for a medical man, and the coffin was not opened until he arrived. The shroud was found twisted and folded about the neck and feet, as if struggles had been made, and there was a quantity of liquid on it, which had issued from the mouth and nostrils during efforts made to breathe. The body was warm, and not rigid; there was a general relaxation of the muscles; the hand was translucent to light, and the pulsations of the heart had not completely ceased! Efforts were made to resuscitate the person, but without success. These conditions are consistent with death from cholera, with the exception of the last. If the medical officer was correct in his observation, this person had really been buried alive.”

Devergie's report upon the above will be found in *Ann. d'Hyg.*, 1870, 2, 310.

Dr. Taylor directs attention to the differences which exist between superficial extravasations produced by violence during life, and the mere hypostatic staining which occurs after death, yet he does not follow the example of many other writers, who restrict the term ecchymosis to the former variety, and use the word suggillation when speaking of the latter condition, by which all possibility of confusion in the use of the terms is removed. As a consequence, all through the book we meet with ecchymoses, which could be demonstrated to be such by the extravasations revealed upon incision, and ecchymoses in which no effused blood can be found, and which must therefore be regarded as mere *post-mortem* stains.

Putrefactive changes are considered in a chapter of great interest and value. It is always curious to trace the source of old fables; especially is this the case when, as in the text, we find an instance where the fable is shown to have been based upon scientific facts. Observations upon the dead body have shown that, at a certain stage of natural decay, the blood becomes again fluid, being easily extruded from any external wound by pressure; and here we have, in Dr. Taylor's opinion, that which will account for the well-known superstition of the middle ages, that contact with the hand of the assassin would cause the wounds of the victim to bleed afresh. The almost equally old story, that quicklime will hasten the progress of putrescence, receives at the hands of Dr. Taylor a *coup de grace*, as he well shows that, so far from hastening decomposition, lime rather exerts a conservative influence upon animal tissues.

Changes taking place in the bodies of those drowned are discussed at some length. The difficulty of establishing any fixed rule as a criterion to determine the time of death is well shown, though it is admitted to be quite practicable, and very important to study and apply the general rules laid down by Casper and Devergie. But slight detailed reference is, however, made to Casper's experience, which was most extensive, and his conclusions the most exact with which we are acquainted. Either Dr. Taylor's personal experience in this matter has been slight, or it is a subject in which he feels little interest, for he only refers to the single fact that the uterus is among the last of the soft organs to undergo decay. We think it well to give here a synopsis of Casper's table, in which is recorded the results of his own observations, which is published in his own work, and transferred therefrom into most works on legal medicine, the accuracy of which can hardly be questioned. The order in which the soft organs undergo putrefactive change is: 1, trachea; 2, brain of young children; 3, stomach; 4, intestines; 5, spleen; 6, omentum and mesentery; 7, liver; 8, adult brain; 9, heart; 10, lungs; 11, kidneys; 12, urinary bladder; 13, gullet; 14, pancreas; 15, diaphragm; 16, large arteries; 17, uterus. The spleen sometimes precedes the stomach and bowels, while the lungs occasionally change places with the heart, but Casper claims, in the most emphatic manner, that the average will be in favour of the order given above.

Evidence to be derived from bones is dwelt upon at much length, poor Dr. Parkman's skeleton being represented as travelling across the page with much grace, in company with the mutilated remains found on Waterloo Bridge some years since, and which, by the way, were never recognized. Priority of death and survivorship also receive very particular notice, many curious cases being cited; but the points made, and the

decisions rendered, in most of them, will principally interest the legal profession; indeed, this chapter is chiefly valuable as showing what medical science, at present, cannot prove, and as affording illustrations of the value and weight of circumstantial evidence.

Passing over the subject of poisoning, which, though perhaps the most authoritative portion of these volumes, we think should form a separate treatise, or at least be reviewed from the standpoint of a toxicologist, rather than from that of a general practitioner, we come to wounds and personal injuries. The consideration of these subjects extends through numerous chapters, forming one of the grand divisions of the work.

Varying definitions of the term *wound* are given, and criticized in succession. Dr. Taylor justly declares his preference for that one in use upon the continent of Europe, which says "a wound includes any personal injury suddenly arising from any kind of violence applied externally, whether such injury is external or internal;" or, as still better, that which defines it as "a breach of continuity in the structures of the body whether external or internal, suddenly occasioned by mechanical violence." Though these may possess no especial value to surgeons, they are claimed to be of much service in a medico-legal sense, tending to simplify the practice of the courts. The whole subject is treated thoroughly and at length, with a good sprinkling of legal points and decisions, which our limits prevent even an examination of. On page 515 a case is cited where the chain of evidence proved deficient because the bullet which had caused death was too large for one pistol and too small for another. This case has caused us much perplexity; we have pondered over it—we have read and re-read it, and we remain in a maze—for while it is readily understood that a large bullet cannot come from a small bore, we can, despite all our efforts, see no obstacle in the way of a small ball being projected from a weapon of the largest calibre. We are forcibly reminded of the story told of Sir Isaac Newton, and think that we can enter into the feelings of his carpenter when told by the philosopher to make a big hole in the study door for the big cat, and a little hole for the little cat.

Spectrum analysis receives considerable attention, being regarded as a valuable aid in the investigation of doubtful stains—at least in the hands of one skilled in its application. Mr. Sorby thinks he has been able to detect so minute a quantity of the colouring matter of blood as the thousandth of a grain. Evidence to be derived from a microscopic examination of hæmatic crystals would also seem to possess value, though like that deduced from the spectroscopic analysis, the basis of accurate observations upon which it rests is as yet too slender to give it much weight in a court of law. Of course, where the blood-corpuscles are not disintegrated, the microscope affords irrefragable proof, while the guaiacum test seems to have the most positive value where these bodies have been destroyed.

While the general consideration of wounds is very full, and many cases, together with the surgery involved in their treatment, are given at some length, we are surprised to find that wounds of the genitals are slurred over hastily, the paragraphs devoted to them being distinguished by unusual meagreness. The most striking recorded cases are not cited, so that any one who has occasion to consult Dr. Taylor's work upon this particular point will find but a poor reflection of the literature of the subject, which at best is not extensive.

Gunshot injuries, when small shot have been used, are treated of with minuteness, but while the experiments of M. Laché are quoted to prove the distance at which fine shot will act as a single missile, no reference is made to the length of barrel, or size of bore of the weapon used, or the comparative proportions of powder and shot with which it was charged—factors which should enter largely into the question, and about which most information will be derived from books like those of Mr. Greener or Colonel Hawker. Indeed, in all such cases it would be better to call to the stand some practical sportsman or gunmaker, as much more likely to prove a skilled expert in such matters than the majority of physicians.

Burns are considered at length, Dr. Taylor thinking it necessary to give pretty full information upon the subject, even to the inclusion of the classical six degrees of Dupuytren. In Chapter LI. that fruitful resource of the writers of mysteries, the spontaneous combustion of the human body, is rightly shown to be without foundation in fact, and in total opposition to the truths of science, as no authentic case, where there was an absolute absence of a starting fire, is upon record. Immediately following is a very interesting account of the conditions under which the process does take place in substances used in the mechanical arts. That this, however, is a matter which should not come within the province of a medical expert, is well shown by the story told of M. Chevallier, whose opinion was required concerning the origin of a fire. While pondering the matter he noticed smoke issuing from a heap of cotton waste, and was informed by a workman from whom he inquired the cause of the phenomenon, that spontaneous ignition often occurred in masses of that material. Being thus furnished with information from one truly an expert in such matters, he was able to go into court and give a conclusive opinion.

Asphyxia, the third grand division of Dr. Taylor, is treated of under the heads of Drowning, Hanging, Strangulation, and Suffocation. All these subjects receive most thorough attention at the hands of our author, the cases narrated, both old and new, being numerous and valuable. The chapter upon hanging is illustrated by several wood-cuts, which show that, in order to produce a fatal result, it is by no means necessary for the body to be completely suspended. The difficulty of proving by the *post-mortem* appearances alone that death has resulted from simple asphyxia is fully demonstrated, and the sensible claim is made that in the attempt to reach a conclusion, the medical man should not be denied access to those details of circumstantial evidence by which alone, oftentimes, a decision can be attained. In drowning, however, the physical appearances are sufficiently decided to permit the formation of a positive opinion in the vast majority of cases. These appearances may be briefly stated to be: 1, engorgement of the venous system; 2, congestion of the lungs and infiltration of their substance with water; while, 3, the windpipe, bronchial, and minute air-tubes contain more or less froth. The above signs are almost constantly present, and when to them is added the presence of water or foreign substances in the stomach and air-passages, fulness of the right side of the heart, with other symptoms sometimes seen, there can be no doubt of the diagnosis.

Although deaths from irrespirable gases may be properly ranked with cases of poisoning, they are treated of in Chapter LVII., where, besides the legal aspect of such cases, will be found much that is valuable in a hygienic point of view. It is a noteworthy fact that the circumstance of a candle

continuing to burn, in opposition to the generally received opinion, does not afford proof that the surrounding atmosphere is sufficiently free from deleterious gases to be suitable for respiration.

Death from lightning, cold, heat, and starvation is considered in one chapter of eighteen pages. The first and last of these causes alone receive anything like just attention. From the fulness with which many surgical and medical points are given, which too often have no possible bearing upon the medico-legal view of the case, we confess to a feeling of surprise when we find the subject of the effects of cold comprised within three pages, while that of the effects of heat is compressed into less than one. Now, were these volumes merely the reflection of Dr. Taylor's own experience in Great Britain, we should not wonder at so decided an omission, but the work claims—and, for the most part, justly—the title of a treatise on the Principles and Practice of Medical Jurisprudence, and as such should show more fully the results obtained by those who have made these subjects matters of special study.

We pass next to Obstetric Jurisprudence. Pregnancy can come before the English courts in but one of two forms—where the asserted pregnancy of a widow affects the position of the otherwise legal heir—or where plea for a stay of execution on account of its existence is entered. The signs of its existence, in the living and dead, are given, but not with sufficient minuteness to render this portion of the book authoritative. The possibility of unconscious impregnation is admitted with quite enough freedom, but the cases quoted are few. Delivery occupies the next place. Great stress is laid upon the fact, that, in order to properly decide a question of recent delivery, much must depend upon the age of the uterine contents, and the difficulty will be in direct proportion to the length of time which has elapsed since the supposed delivery.

Abortion forms the subject of two chapters. The old distinction between emmenagogues, which stimulate the vessels of the womb, thereby promoting a menstrual flow, and ecbolics, which directly induce contraction of the uterine fibres, is revived, it being held that, while we have many drugs belonging to the former class, ergot stands almost, if not entirely, alone in the latter, and this we believe to be in accord with the best authorities upon the subject. The remarks upon the induction of premature labour by general practitioners, without a previous consultation, while many may deem them old fashioned, strike us as both sensible and forcible, for it may well happen that a physician whose practice has not been largely obstetrical, may, by a neglect of this precaution advised by Dr. Taylor, find himself most awkwardly situated, should he be sued for producing criminal abortion. As in England and France, the mere attempt to procure abortion is treated as criminal, the case is not affected should it be one of extra-uterine foetation or monstrosity, or even should it be proved that pregnancy has not existed at all.

Birth and inheritance next confront us with their attendant intricate legal questions. Dr. Taylor thinks the best and simplest test of live birth is auscultation, for when the heart sounds can be distinctly made out there can be no difficulty in pronouncing that the child has been born alive; but until we can distinctly define human life and demonstrate its starting-point, there will always be room in these cases, for an ample display of casuistry upon the part of ingenious counsel. The law, being regarded as an exact science, capable of establishing its own rules of evidence, might perhaps best settle the matter by requiring proof of a

certain duration of undoubted life, to be determined by definite signs, even if such a series were somewhat arbitrary.

Treating of monstrosities, our author speaks of the Siamese twins, Chang and Eng, whose recent death has brought them again to the notice of the profession. Dr. Taylor says that he examined them carefully when they were first exhibited in London, when he seems to have diagnosed the intimate abdominal connection between them, which has since been proved to have existed, though he erred in thinking that they possessed a common peritoneal cavity. Two cases, which would formerly have been cited as instances of early foetal maturity, are, as we think, very properly classed among superfetations. They seem so distinct, and are derived from such indisputable sources, that we give them in extenso, although they are not new

"1. William, first Baron Auckland, married Eleanor, second daughter of Sir Gilbert Elliot, Bart., and sister of Gilbert, first Earl of Minto, by whom he had fourteen children: amongst whom the fourth was the Hon. Caroline born on the 29th July, 1781, who lived sixty years, and the fifth the Hon. William Frederick Elliot, who was born on the 19th January, 1782, and survived twenty-eight years. The interval between the two deliveries was 174 days, and, allowing that fruitful intercourse took place a week after the first delivery, this would leave 167 days for the birth of a child showing its powers of life by reaching the age of 28 years. This is thirteen days less than the period fixed by experience for the rearing, and forty-three days less than the period assigned by Dr. Hunter for the gestation, of a child which could be born with sufficient strength to attain manhood. 2. Lord Cecil James Gordon, brother to the late Marquis of Huntly, married the eldest daughter of Maurice Crosby Moore, Esq., of County Tipperary, Ireland; and had a child, Evelyn, born on the 19th September, 1849, and a son, Cecil Crosby, born on the 24th January, 1850, both of whom are now living (1865). These dates leave an interval between the two deliveries of only 127 days; and deducting a week, the gestation of the second child, which has reached the age of 15 years, would be only 120 days, or four calendar months."

Dr. Taylor is disposed, vol. ii. p. 230, to allow large latitude to the duration of gestations, in opposition to the position of many medical jurists. In England the courts have recognized a pregnancy lasting forty-three weeks, and in this country a gestation of forty-five weeks and three days has been admitted to be possible.

The subject of infanticide extends over one hundred pages, being very fully considered in all its varied medical and legal aspects. Much space is devoted to some so-called tests of live birth which are finally judged by our author to be no tests at all, while some other criteria highly esteemed by other standard writers receive no notice whatever. As a prominent instance of this fault, we observe that no mention is made of the condition of the ossific centre at the lower end of the femur, which Casper and others hold to be so important and trustworthy an index of foetal maturity. The *docimasia pulmonalis* is treated of at length and its great value vindicated.

The general impression left by a perusal of these pages is that infanticide is indeed contrary to law, but is at the same time a crime which judge, jury, and community alike, both in this country and Great Britain, too often unite in finding excuses for; insisting that its commission must be proved by evidence, against which no theoretical objections can be urged by a subtle attorney. While such is the tenor of public opinion, no wonder, that with a constantly increasing number of cases of this unnatural and heinous crime, but few convictions are reached—and we are

almost inclined to think it would be better to repeal existing statutes, and deny to the product of conception, that has not enjoyed some days of extra-uterine life, any rights which an adult is bound to respect — such a course would at least save much expense to the state. Dr. Taylor, however, thinks that by seeking a verdict of manslaughter rather than one of murder, justice would more frequently be done, and in this opinion he is supported by the result of several recent cases.

Rape and unnatural crimes are treated of with brevity, yet in a clear and practical manner, but the illustrative cases are too few, especially when rape upon adults is considered, concerning which subject of late years some valuable studies have been written and a few instructive cases recorded.

We pass over the subject of insanity, to which Dr. Taylor devotes one hundred and thirty pages, as one of too extended scope for the pages of this review, and also as being one in which general practitioners have little interest, as they are rarely or never summoned as experts in such cases.

There only remains the subject of life insurance, which has so grown of late years that it bids fair to soon have a large literature of its own. This portion of the work appears to have been rewritten and to have had much care expended upon it. The rules of some of the best European companies are given in full.

These rules are so rigid and the loop-holes so numerous, that we are impressed with the idea that the companies need never pay unless they wish to; the duty of self-preservation has indeed forced them to adopt stringent regulations, as the frauds practised upon them have been enormous, and the efforts to impose upon them have led to the perpetration of some of the most remarkable of modern crimes. Dr. Taylor's last chapter contains a record of some of these celebrated cases, a perusal of which will well repay the reader.

In taking leave of this work we feel that we have given but a slight idea of the value of its contents, which make it an invaluable aid to any student of the subject, and one which he cannot afford to do without. Where so much has been well done it may seem unfair to criticize slight defects, yet we deem it no injustice to admit that we have been disappointed to find so little reference made to the work of other authorities. This omission is especially noticeable with regard to Casper, who, in our opinion, has contributed more to enrich and establish upon a good foundation the science he so well taught than any other writer.

Dr. Taylor's style is plain and ungarnished, but always clear, and his meaning cannot be mistaken. We confess to a partiality for big books, and as we lay these volumes down we feel indebted to their author for many pleasant hours spent in reading them. S. A.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXI.—1. *Transactions of the Obstetrical Society of London*. Vol. XV. For the year 1873. 8vo. pp. lx., 309. London: Longmans, Green & Co., 1874.

2. *Proceedings of the Dublin Obstetrical Society*. For session 1872-73. 8vo. pp. xvi., 202. Dublin: Fannin & Co., 1873.

THE Obstetrical Society of London numbered, January 1, 1873, 634 members, and held ten sessions in the year, with an average attendance of 34 Fellows and 5 visitors, the extremes being 19-3, and 53-17. It is, therefore, no exception to the rule, that a working society has but a moderate attendance; and it will also be found that a few busy men do most of the work, and find time to be present, when others, less occupied, *cannot possibly* attend.

The first article of the London *Transactions* is chiefly of local interest, as it applies particularly to the fatality under obstetrical practice by English midwives, and shows the importance of having such women educated by compulsion of law, for the protection of the poor who come under their care. This question will be found fully set forth in *Aveling on English Midwives*; and is one which will no doubt have to be considered with us at some future day.

Partial Severance of the Cervix of a Prolapsed Uterus, by a Ligature of Matted Pudendal Hairs. By N. COATES, L.R.C.P.—Married woman of 60; never pregnant; had prolapsus with partial protrusion of cervix for four or five years; was attracted to her condition by profuse hemorrhage after sitting on the stump of a tree, which pressed upon the protruding, strangulated mass, then as large as a walnut. The ligature, upon being cut through and removed, was found to have caused an ulceration into the neck, and to constitute a ring about the diameter of a pen-holder. It was no doubt formed of hairs from the labiæ, matted around the protruding cervix by the vaginal discharges.

The Address of Dr. Edward John Tilt, the incoming President, is mainly congratulatory, and recommends that in the future more attention should be paid to reporting cases of disease in women and children.

Case of Delivery by the Forceps in Face-presentation in Mento-lateral Position. By J. BRAXTON HICKS, M.D., F.R.S.—Mother in labour twenty-four hours when called in; face driven down partly into cavity of pelvis, in an exactly transverse position, with chin to left side. Long curved forceps applied in antero-posterior diameter of pelvis, with considerable difficulty for want of space anteriorly. Efforts made during traction to rotate chin forward, but to no purpose; face emerged transversely, as it had entered; pelvis presumed to have varied from the usual type. Child dead; occipital bone driven under the parietalia; vertical diameter of head not particularly reduced. Dr. Hicks was not conscious of exerting any great amount of power in traction.

Case illustrating the Treatment of Post-partum Hemorrhage by the Intra-uterine Injection of Perchloride of Iron. By HEYWOOD SMITH, M.D.—Woman aged 30; patient in British Lying-in Hospital; had had two children and four

miscarriages, with severe floodings in all the premature deliveries. Delivered January 26, 1872, after twelve hours' labour, of a full-grown male fœtus, with no unusual loss. Doing well for several days. On 9th day some hemorrhage, and passage of several clots; no apparent cause. Ergot administered. On 10th day injected into uterus one part strong liq. ferri perchlor. to eight of water. 16th day, bleeding not arrested, although lessened; injection repeated 18th, hemorrhage recommenced during night; injection one part to four. 20th day, injected equal parts. No bad symptoms after any of these trials; no pain; slept well. 21st day, strong liq. ferri injected from a f 3ij syringe; followed by severe pain, referred to fundus. No more hemorrhage. The loss never amounted to a flooding, but oozed continuously, ceasing after each injection, and recurring generally only a short time before repeating the injection. Woman became violently sick, with vomiting, rapid pulse, delirium, distended abdomen, fever, and exhaustion. Died on 28th day. The uterus, on removal, measured five inches in length, nearly four wide, and walls three-quarters thick. Anterior and posterior surfaces marked with blackish streaks, evidently indicating the course of the uterine sinuses. The cavity, upon being laid open, showed that these were filled with black fluid, and their walls stained dark. A fragment of placenta, of the size of a filbert, was found retained. Space will not permit our giving a more minute anatomical description. Dr. Smith sums up the case as follows:—

"1. That post-partum hemorrhage, happening after complete contraction of the uterus, and therefore after the uterine sinuses have been emptied of blood, is evidently arterial.

"2. That when a solution of perchloride of iron is injected into the uterus, the sinuses take it up and carry it into the veins; the tissues also immediately surrounding the sinuses becoming stained.

"3. That the perchloride of iron does not produce contraction; nor, by coagulation of blood, blocking of the orifices of the uterine arteries; and,

"4. That the perchloride of iron is a styptic, the use of which in the cavity of the puerperal uterus is not innocuous."

A long discussion followed this paper, from which we extract the following opinions:—

1. That in obstinate hemorrhage, such as reported, the presence of a portion of placenta should be suspected, the uterus dilated, and the foreign substance removed.

2. That the solution employed is a valuable one, and has saved many lives, but cannot be used with safety unless very much diluted.

3. That the procedure should be employed only after other means have failed in causing uterine contraction and arresting hemorrhage.

Dr. J. J. Philips admitted the danger, but believed in the propriety of using a moderately strong solution, after removing any fragment of retained placenta, as desperate cases were in more danger from hemorrhage than the remedy employed. He had not noticed any severe pain after using the styptic. In one case he had met with, profuse hemorrhage occurred from a fragment of placenta being retained, on the 21st day; and, in another, not for five weeks.

At the next meeting the discussion was again entered upon, and at much greater length.

Dr. Snow Beck believed in there being great danger from the injection of styptics soon after delivery. The results appeared to be, that the hemorrhage continued with no ill consequence; that it ceased, and the woman either recovered fairly, or after a lingering convalescence; or that she appeared well two or three days, then became weak; pulse 130 to 160; abdomen tender and tympanitic, followed by vomiting, diarrhœa, peculiar delirium, and certain

death. He examined the uterus of Dr. Smith's patient, and found the utero-placental arteries open in many instances, and their canals free from coagula. He believed that the styptic was taken up by the veins, carried into the circulation, and thus caused death. He advocated the use of ergot, cold, compression, etc., and believed that failure was due rather to the mode of use than want of power in the remedies.

Dr. Bantock had produced death in seven or eight hours from a perchloride injection. He advocated early and long-continued compression of the uterus, so as to prevent inertia, and insure contraction.

Dr. Wynn Williams preferred applying the perchloride on a sponge introduced with the hand into the uterus, and to be removed as the organ contracted under its influence. He believed it quite as efficacious as the injection, and at the same time free from its risks.

Dr. Protheroe Smith recommended the substitution of the tincture of matico, which he had frequently used.

Dr. Barnes strongly advocated the use of the perchloride as the only reliable remedy in desperate cases, particularly in delicate, exhausted subjects; and believed that death, attributed to the remedy, might often be traced to exhaustion, shock, etc. The general opinion of the Society was rather in favour of the use of the perchloride.

Progress of Pelvic Pathology during the last Twenty-five Years. By EDWARD J. TILT, M.D.—As seventeen pages of the volume are occupied by this paper, we can only refer to the "Propositions," which, he says, contain the pith of his work on *Diseases of Women and Ovarian Inflammation*, published in 1850, and which, he contends, have only been substantiated by the test of time, viz.:—

1. "The admitted frequency of inflammatory lesions in the ovaries and in the surrounding peritoneum is of much greater practical import than is generally admitted.

2. "Of all inflammatory lesions of the ovary, those involving destruction to the whole organ are very rare, while the most numerous, and therefore the most important lesions, may be ascribed to a disease that may be called chronic, or subacute ovaritis.

3. "As a rule, pelvic disease radiates from morbid ovulation.

4. "Morbid ovulation is the most frequent cause of ovaritis.

5. "Ovaritis is the chief cause of pelvic-peritonitis.

6. "Blood is frequently poured out from the ovary, and from the oviducts into the peritoneum.

7. "Subacute ovaritis not unfrequently causes and prolongs metritis.

8. "Ovaritis often leads to considerable and varied disturbance of menstruation.

9. "Some chronic ovarian tumours may be considered as aberrations from the normal structure of the Graafian cells."

On the Pathology of certain so-called Unilocular Ovarian Cysts. By GEORGE GRANVILLE BANTOCK, M.D.—The nature of the peculiar cystic disease in question is best shown by reference to a specimen exhibited, and described as follows: "It consists of the uterus and its appendages as they were removed from the body of a patient æt. 16." Ovary healthy on right side. In the fold of peritoneum between this ovary and Fallopian tube, that peculiar organ, the parovarium, or organ of Rosenmüller, is plainly seen. At its outer angle, nearest the tube, you will observe a small cyst, about as large as half a field bean, evidently originating in one of the tubules of the organ. On the left side, ovary also healthy; parovarian cyst as large as the ovary. Of the size of such cysts when developed the author says: "It has gone forth

stamped with the high authority of West, that parovarian cysts never attain a greater size than that of an orange, and I cannot allow it to pass without a few words." He then argues, that from the situation of the cyst, its vascular supply, the thickness of its walls, and nature of its contents, there can be no limits to its dimensions, or liability to rupture from distension. He opposes the idea of Dr. Meadows, on anatomical grounds, and denies the possibility of the cyst having originated in the hilum of the ovary. He also says that all unilocular cysts in the neighbourhood of the ovary, or involving it by contact, though leaving it healthy, are of parovarian origin; and that there is no such thing as true unilocular or unifollicular disease of the ovary, except in its earliest stage.

1. *Case of Extra-uterine Pregnancy; Gastrotomy successfully performed*, by WILLIAM ROSS JORDAN. 2. *Case of the same*, by JOHN SCOTT, F.R.C.S., with operation. 3. *Case of the same*, by ALFRED MEADOWS, M.D.—These three cases have been already noticed in the number of this Journal for July, 1873, p. 276–8.

Hypertrophic Elongation of Cervix Uteri at Full Term of Pregnancy. By GEORGE ROPER, M.D.—Primipara, age 22; cervix protruding about three inches, and thick as a man's wrist; whole length about four inches; canal size of index finger; structure hard and firm; been in labour thirty-six hours; some expansion of neck above. After four more hours made seven incisions in os externum at equal distances, and extending an inch and a half within; gradual expansion for sixteen hours; used forceps; child living; recovery as after ordinary labour. Two months after delivery found cervix proper but slightly larger, or longer than natural; hypertrophied extension soft and flabby like a prepuce—this was removed. Woman has had several children since, with easy labours. Removal of elongated cervix after involution necessary, to avoid a repetition of development, with the same trouble in after pregnancies.

Case of Complete Uterus Bicornis; the septum extending into one common cervix; Pregnancy of Right Horn; Turning and Extraction on account of Pelvic Contraction, the conjugate diameter measuring only two and a half inches. By E. H. M. SELL, M.D.—Chiefly interesting from rarity. Woman single; thirty-one; Bohemian. Professor Braun diagnosed *uterus bicornis*. Right impregnated; left containing protruding decidua. Child female, four pounds and fourteen ounces; asphyxiated; restoration after half an hour's work by means of artificial respiration, frictions, sprinkling with cold water, etc.; discharged in thirteen days.

Diagnosis of Subacute Ovaritis. By EDWARD JOHN TILT, M.D.—This paper was noticed in the number of this Journal for January last, p. 275.

Necrosis of Ossa Pubis following Delivery.—Dr. PLAYFAIR exhibited a specimen of this rare form of puerperal disease, remarking that two, reported by Trousseau, were all that he had found recorded. The specimen came from a young primipara of 23, who had good health until the time of her labour, which was easy and natural. Three weeks after delivery an abscess burst at the anterior portion of the left labium minus, and discharged a small quantity of offensive pus; after which she had pain and tenderness in left inguinal region, with inability to straighten the corresponding thigh. There was an offensive purulent discharge from the vagina; left thigh became cedematous at its upper part, ending in abscess. Died of exhaustion in nine weeks after delivery.

Pubic bones found entirely necrosed, and symphysis disintegrated and destroyed, from which extended a large sac partly filled with pus, and communi-

cating with the vagina, and also the left groin, where there were openings by which it discharged.

Dr. Playfair believed the disease to originate in some obscure form of septicæmia, giving rise to a low form of inflammation in the bones and periosteum.

Two Cases of Extra-uterine Foetation. By D. C. McCALLUM, M.D.—1. In fourth month of pregnancy attack of indigestion, with vomiting, resulting in rupture of a tubal cyst, followed by death in about three-quarters of an hour. Large amount of blood in abdomen; uterus enlarged, and inner surface covered with a well-marked decidua.

2. Rupture at an early period; intense abdominal pain, followed by symptoms of collapse. Patient believed to be in second month of pregnancy; treated with opium and stimulants; recovered slowly in two months. Had had four children; became again pregnant, and was delivered seventeen months after the attack.

These reports remind the reviewer of two somewhat similar cases in his own practice. The first was tubal, in the first month, and death resulted in twenty-three hours. The second was also very early, and the patient, after going down as near to death as I have ever seen one to do that did not actually die, recovered slowly, has since borne another child, and is now quite robust. In the first case the mother was menstruating at the time of the accident, which resulted from pressure exerted in ascending a stairway. The cyst was about the size of a common plum, and the rupture that of a quill.

The Use of Intra-uterine Stems in Uterine Disease. By C. H. F. ROUTH, M.D.—As this is a question which has recently excited considerable notice, we will endeavour to give the important points of the article.

Intra-uterine pessaries have been much abused, and their use condemned; but experience has shown that their use is advantageous in many cases when properly applied.

1. "All inflammatory or congestive symptoms about the uterus or ovaries should be first treated and removed," many of the accidents, such as abscesses, metritis, and even peritonitis being due to the neglect of this precaution. If the slightest pain is felt in passing the sound, and if this is especially marked at the fundus, it is dangerous to use the stem until after treatment shall have removed the difficulty.

2. "It is important in some cases to enlarge the uterine canal" For this purpose carefully cleansed and dried sea-tangle tents are recommended, as having much more power of expansion than sponge; or the hysterotome may be required.

"There are four classes of cases in which the intra-uterine pessary should be employed, viz., in cases of membranous cervix; certain cases of amenorrhœa; also of dysmenorrhœa, whether mechanical or simply neuralgic; and in uterine flexions."

These points in the use of the stem pessary are all illustrated by reports of cases benefited by its employment. Dr. Routh never introduces a stem more than two inches long, except where the uterus is preternaturally elongated.

The discussion, after the reading of the paper, showed that there was a great diversity of opinion upon the value and innocence of the stem-pessary.

2. *The Dublin Society* has had an existence of thirty-five years, and numbers 142 members.

On Endo-metritis.—The paper of LOMBE ATTHILL, M.D., is a full and valuable clinical one. The symptoms enumerated are: Leucorrhœa, pain, dysmenorrhœa, or sometimes irregular menstruation, menorrhagia, and reflex irritation. The physical signs are increased length; size of the cavity of, and

bulk of the fundus of, the uterus; increased sensibility of the mucous membrane lining the cavity of the organ; a patulous os internum, and often an abnormally sensitive condition of the mucous membrane at that point; displacements anteriorly or posteriorly of the fundus resulting from increase in size and weight.

Dr. Atthill recommends local depletion by punctures of the cervix; dilatation by sea-tangle tents, and subsequent application of fuming nitric acid to the uterine cavity; and the introduction of a piece of solid nitrate of silver, which is allowed to remain. He condemns the use of liquid injections as dangerous, but regards the fuming nitric acid as free from risk. He has invented an intra-uterine speculum to be used after dilatation, and through which he makes his applications.

On the Constitutional Character and Treatment of the Diseases of Women, connected with Chronic Inflammation of the Uterus. By THOMAS MORE MADDEN, M.D.—“Chronic inflammation of the neck of the womb is the most common of all the diseases peculiar to women.” Of 6300 cases of diseases of women in dispensary practice, rather more than one-tenth were of this class; and the proportion in private practice is fully as large as in hospital or dispensary experience.

The author believes the apparent increase of uterine diseases to be due to the fact, simply, of their more ready detection since the revival of the use of the speculum; and whilst using the instrument to a great extent, regards it as justifiable only where absolutely demanded for diagnosis and treatment. He objects to the use of Sims's duck-bill speculum in ordinary cases, and especially to the employment of his tenaculum in drawing down the uterus. He believes the tactile sensation sufficient for diagnosis in most instances, and regards the speculum as mainly of value in treatment.

Sterility almost always accompanies chronic cervical inflammation, and as long as it exists to any serious extent the patient must remain barren; and it is useless to attempt to remedy this condition by any form of surgical operation.

In the majority of instances of supposed heart-disease in women, and especially in hysterical subjects, he believes the symptoms due to uterine inflammation, and to be removable by its cure. He regards chronic inflammation of the uterus, and its results, including ulceration, as a consequence of a coincident constitutional disease, and, therefore, not to be cured by local measures except in rare instances. As constitutional remedies he recommends cod-liver oil, preparations of iron, and iodine; quinia, and mineral waters; believing the disease, in many instances, to have a strumous origin, and, in some, a gouty, rheumatic, or syphilitic one, and to require a corresponding treatment proper for such maladies.

Dr. Madden gives the credit of first applying the solid nitrate of silver within the cavity of the womb to Dr. Kennedy, of Dublin (1847); to Dr. Denham that of leaving a portion in the uterine cavity; and to Dr. Kidd that of dilating the cervix with sea-tangle tents, and applying fuming nitric acid in intra-uterine affections—all of them Presidents of the Dublin Obstetrical Society. He highly recommends, in congestion of the cervix, the application of a ball of cotton saturated with glycerine, as employed by Dr. Sims. He employs, for simple ulceration of the cervix, strong tincture of iodine, applied twice a week; and, when there is suspicion of syphilitic origin, the nitric acid. He does not recommend the use of potassa cum calce, or caustic potash, as they are difficult to limit in action, and may produce acute metritis. For hyper-

trophy of the cervix he prefers, in most instances, iodine dissolved in glycerine, to any destruction of the part by escharotics.

On Dactylitis Syphilitica, a specific affection of the Fingers and Toes. By J. MOYAN, M.D.—This peculiar form of inherited syphilis appears to manifest itself at a later period than the more usual types of the disease. Dr. Moyan exhibited casts taken from the parts affected, showing their globular form, and looking as if the thumb were thrust through an India-rubber ball. He reported the case of a child whose mother had given birth to two healthy children, then been syphilized by her husband, and produced the infected subject. The enlargement, after some time, became coloured on the surface, then tense, and of a purplish-red; and, when opened, gave exit to a thin fluid, under which gummatous matter appeared. The disease affected a foot and one thumb, and was seven months getting well. Another case was in a boy of nine years of age; and a third in one of eleven, which was a very severe one. He had eight marks of gummatous suppuration from time to time.

Dactylitis generally occurs in the first joint of a finger, and on the dorsal, rather than the palmar aspect. The skin is at first whitish, very tense, and has a creaking sensation; but afterwards becomes coloured, as before mentioned.

"It was a disputed point whether the father could produce a syphilitic child without affecting the mother: but the influence of the mother beyond yea or nay was very potent. He saw a case of a mother producing a healthy child, and the child remaining healthy for two years. The mother was one of the worst cases of syphilis in the hospital, and was under treatment in it for two years. The child did not show any signs of syphilis until the end of two years, and then it showed severe syphilitic taint." p. 102.

Treatment of Vesico-vaginal Fistula, with loss of Urethra, Neck, and Floor of Bladder. By GEORGE H. KIDD, M.D.—After speaking of the difficulties and unsatisfactory results of the operations of Jobert and Baker Brown, the former closing the vulva, and making an opening into the rectum; and the latter making a new urethra under the arch of the pubis above the old one, and then drawing down the uterus, and bringing the sides of the vagina together, Dr. Kidd reports a case where he closed the vulva, leaving a long, narrow passage close to the pubes, which might answer the purpose of the urethra, and enabled the woman to retain her urine by means of a spring truss-like compressor, after the description of Trélat, of Paris, as shown in the *Gazette des Hôpitaux*, Dec. 30, 1865.

Drs. Atthill and Johnson performed similar operations with success, the latter at the suggestion of Dr. Kidd. In Dr. Atthill's case a part of the urethra was left.

Epilepsy during Menstruation from Occlusion of the Vulva, cured by Operation. By Dr. MORGAN.—The subject of this was a single woman, æt. 22, strong, and well developed; occlusion from sloughing, following fever. Cicatricial web excised; parts kept separated by a tent until healed over; epilepsy ceased.

This case is of interest when compared with those reported by Dr. Sayre, of New York, where three boys were cured of partial paralysis, resulting from reflex irritation, by circumcision of a congenital phymosed prepuce in each instance. The affection of the nervous system, although of a different type, was no doubt due to reflex action from the same system of peripheral nerves in the woman and boys.

Cases of Amenorrhœa from Congenital Malformation. By FLEETWOOD CHURCHILL, M.D.—These are instances of the effect of defective sexual de-

velopment upon ovulation, menstruation, sexual passion, and the external marks and contour of womanhood, which may be summed up as follows, viz. :—

1. Sexual passion indicates, even without menstrual discharge, the presence of at least one ovary.

2. The absence of such passion is no proof of the want of ovaries, as multiparæ not unfrequently have never had any sexual gratification.

3. Where the want of this passion is associated with a want of mammary development and womanly contour, it is to be presumed that the ovaries are undeveloped.

4. Menstrual epistaxis is believed to be generally associated with ovulation.

Dr. Ringland related a remarkable case of unilateral development. The woman was 20, and had never menstruated. She had no clitoris, vagina, or uterus; the urethra being close to the anus. She had an ovary on the left side; left breast was developed; hair on pubes only on that side, and left labium alone developed.

Dr. Kidd was of the opinion that in some instances the uterus and ovaries remained inactive, or were in an infantile state, which might be remedied by the galvanic pessary, stimulating them into development or activity.

Chronic Inversion of the Uterus. Case of five months' standing reduced by GEORGE H. KIDD, M.D., and one of seven months by G. JOHNSTON, M.D.—In both cases the inversion resulted from traction upon the cord, and each was subject almost continually to hemorrhage. The reduction was effected by grasping the uterus, and, by degrees, forcing it through the os, the woman being under the influence of chloroform. Dr. Johnston states the time required in his case as twenty minutes; Dr. Kidd as five to ten. Both made good recoveries.

Dr. McClintock reported a case where he had made three attempts at reposition, but failed, although it seemed to be at first a favourable case, the bulk of the uterus not exceeding that of a walnut. He subsequently amputated the uterus, and the woman recovered. After removal the uterus could not be re-inverted without using force sufficient to lacerate it. Several instances were reported of pregnancy in cases of reduced inversion.

Diagnosis and Treatment of Uterine Polypi. By THOMAS MORE MADDEN, M.D. :—

"The distinction made between intra-uterine tumours and intra-uterine polypi is quite untenable, as their structure is identical; either may be encapsuled, and their symptoms cannot be distinguished. In fact, an intra-uterine fibroid polypus is but a more advanced stage of a submucous tumour which has lost its sessile form from its own weight, as it grows downwards, becoming constricted at its point of projection from the uterine wall, so as to constitute a pedicle."

Symptoms.—Menorrhagia, or persistent metrorrhagia, and profuse or fetid leucorrhœa; a sense of weight from the enlargement of the uterus; pain, from a mere soreness or dull aching in the lumbar region, to the most intense uterine colic; pressure on the bladder or rectum from displacement of the uterus; and impairment of the patient's health from the hemorrhagic and leucorrhœal discharges.

Treatment.—Removal of the polypus either without or after dilatation of the cervix, as may be necessary; and the application, subsequently, of strong nitric acid on cotton, followed by tepid vaginal injections twice a day of infusion of chamomile. Where surgical treatment is impracticable, or will not be submitted to, Dr. Madden recommends the use of bromide of ammonium or potassium, and small doses of tincture of iodine, to be persevered with for some

months at a time; the local application of iodine to the tumour, and tepid or cold injections by means of a uterine douche.

Dr. Kidd said he had never seen much benefit from medical treatment. He thought that chloride of calcium made patients more comfortable than any of the drugs recommended, but had never seen it cause absorption of the tumour.

Dr. Churchill held the same views. He referred to the great danger of dilating the *internal os uteri* with a tent.

Dr. Atthill spoke of the dangers of using cold water injections into the vagina, and the risks to be run by dilating the cervix for repeated applications to the tumour. He recommended that they should be made through a tube.

Ovarian Dropsy, with Unusual Quantity of Fluid. By Dr. E. G. BRUNER. —The subject of this case was married at 40; circumference of abdomen sixty-three inches; breathing free; slight emaciation; functions of bowels and kidneys healthy; size increasing for some years; gave birth to a healthy child a year before; occasionally menstruates. Ten gallons of dark, oily fluid drawn off; no distinct tumour to be felt. Recovered rapidly. Ten gallons of similar fluid, but lighter in colour, again removed in ten and a half months. In interval says she led an active life, enjoyed good general health, and menstruated at irregular intervals. Still under care when reported.

ART. XXII.—*The West Riding Lunatic Asylum Medical Reports.* Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. Vol. III. 8vo. pp. vi., 349. London: Smith, Elder & Co., 1873.

IN the Journal for January, 1872, we gave an account of the objects of this publication, with a notice and abstract of the essays which made up its initial number. A year later we noticed the second annual volume. The present collection consists of fourteen articles of very diverse merit.

The first paper is by WM. TURNER, M.B., Professor of Anatomy in the University of Edinburgh. It is styled *The Convolutions of the Human Brain considered in Relation to the Intelligence*. We find first a *resumé* of known facts as to the weight of the brain in different races, sexes, and individuals. A description of the convolutions follows. Speaking of the relation between high intelligence and well-marked convolutions, the writer admits that the concurrence of the two, though common, is by no means constant or without striking exceptions. In certain lower animals, too, greater intelligence exists in species with smooth brains than in others whose cerebral surface is convoluted. Should it be suggested that the thickness of the cortical substance might be the test and measure of cerebral activity, the writer would reply that in some localities, and some individuals, the proportion of cerebral cells to connective tissues is greater than in others. These cerebral or nerve cells, too, differ in size among themselves. The author seems inclined to believe that the largest of these are the most efficient. Vascular supply, everywhere needed to insure proper functioning, must influence cerebral activity, by its quality and its amount.

Having thus directed attention to conditions other than mere bulk or extension, the writer reviews the chief arguments of those who believe that different powers and faculties are localized in certain definite convolutions. Proof of such views he thinks is still wanting. Believing that the object of the convoluted structure is to increase the amount of gray matter, and of the peculiar

cells which it contains, he does not believe that diversity of function can be ascribed to different convolutions. The proper direction of research, for those who seek to establish localization, he thinks should be to show by microscopic evidence, some persistent and characteristic differences in the cells of different localities.

The second essay on *Experimental Researches in Cerebral Physiology and Pathology*, by Dr. FERRIER, has already been noticed in our pages.

Dr. HERBERT C. MAJOR, who has before recorded valuable microscopic observations, continues work in this direction, and here records the results of examination in a number of diseased brains. The style of this paper, on the *Histology of the Brain in the Insane*, is such as to inspire us with great confidence in the care, skill, and judgment, of its author. Good, honest work, such as shall afford trustworthy material for future generalizations, seems to be his object, rather than the attainment of notoriety, or making a sensation. Its modesty and candor make the article a model of its kind.

Dr. J. MILNER FOTHERGILL furnishes a paper on *The Heart Sounds in General Paralysis of the Insane*. Having noticed, almost by accident, some peculiarity in the cardiac sounds in several patients affected with paresis, he was led to extend his observations, when he met with results wholly unforeseen. Out of fifty-five cases auscultated, forty-four presented a decided increase or "accentuation" of the second or aortic sound. This same peculiarity, he reminds us, has been pointed out as a most frequent symptom in chronic Bright's disease. Seeking for an explanation of this feature common to four-fifths of the general paralytics, Dr. Fothergill finds but one condition, capable of causing the phenomena, which could be supposed to be thus generally present. This condition he believes to be increased vascular area, and consequently increased blood supply, throughout the cerebro-spinal system. The larger and heavier column of blood above the valves causes their more forcible closure. To support this view he examined several cases of active mania in which cerebral hyperæmia was believed to exist, and actually found a similar alteration of the second sound. Moreover this accentuation diminished when the patients were made to lie down. Evidence is also adduced to prove the existence of distended cerebral bloodvessels in the early stages of paresis; and the writer believes that, later, the obstructive influence of degeneration would have the same effect on the second sound.

The possibility of very considerable variation in the amount of blood contained in the brain, is believed, by Dr. Fothergill, to be due to corresponding inverse change in the serum occupying the peri-vascular canals.

Unlike another contributor to this volume, Dr. Fothergill deems insanity rather antagonistic than favourable to heart disease. He approvingly quotes Griesinger, to the effect that "affections of the heart are rather rare than frequent in the insane."

Dr. T. W. McDOWALL, a resident of the asylum, makes a beginning in this number, of what promises to be a somewhat elaborate investigation into the *Power of Perceiving Colours, possessed by the Insane*. In the *resumé* here given of our knowledge upon the general subject of colour discrimination, the writer adverts to the scarcity of authorities. The subject has been thoroughly treated, he says, but the works upon it are shut up in foreign libraries. Although Dr. McDowall's personal inquiries are as yet not much more than begun, he has already found reason to believe that much curious and novel truth may be elicited by this investigation.

A practical paper upon the *Nitrite of Amyl in Epilepsy* is the work of Dr. BROWNE, chief of the asylum, and editor of the Reports. Some experiments here

recorded having indicated that epileptics were peculiarly susceptible to the action of this drug, and that action seeming to be in some respects the reverse of what takes place during an epileptic seizure, the idea not unnaturally suggested itself to Dr. Browne, that the nitrite might be of service in warding off paroxysms of epilepsy. Without meaning to dogmatize as to the nature of the seizure, the writer believes that there always occurs, at its commencement, an intense contraction of the cerebral bloodvessels. As the inhalation of the drug causes vivid and extensive blushing, owing to capillary dilatation, it would seem not unlikely, given at the right moment, to prevent or lighten a fit. And so it has proved. In a case where the fits occurred daily, inhalations three times a day postponed them for nineteen days. Though the seizures reappeared upon partial abandonment of treatment, yet, later, they were quite infrequent when medication was wholly given up. The night attendants upon epileptics were now provided with the medicine, and instructed to administer it to any patient in whom they noticed the signs which experience had shown to be the precursors of a fit. To the surprise and pleasure of Dr. Browne, it was found that not only were seizures prevented by treatment of the prodromata, but that convulsions actually begun were nipped in the bud, cut short, and arrested. In that terrible state known as the *status epilepticus*, inhalation of the nitrite was tried with the best results. The drug seemed to possess the power absolutely to break up the morbid habit. Unless the writer has deceived himself, as well as his readers, we must believe that the nitrite saved several lives under his observation.

We regard this paper as one of the greatest importance. The moderation of the writer in not claiming curative power for the nitrite of amyl, gives the greater weight to his opinions as to the value of the drug, in preventing suffering, and saving or prolonging life. We may be mistaken, but we cannot help thinking, that the nitrite of amyl is destined to work a revolution in the treatment of epilepsy. We cannot avoid indulging a hope that this drug, added to ordinary judicious medical treatment, may be found adequate to the complete control of epileptic fits. Whether it can prevent the manifestation of the constitutional weakness in some way, is a different question.

Dr. J. HUGHLINGS JACKSON contributes a paper entitled *Observations on the Localization of Movements in the Cerebral Hemispheres, as revealed by Cases of Convulsion, Chorea, and "Aphasia."* We must confess our inability to catch the drift and intention of this article. Other readers, however, may be more quick of apprehension.

Dr. JOHN LOWE furnishes an article *On Electro-excitability in Mental and Nervous Diseases*. The special object which he has kept in view in the observations here recorded, is to ascertain the diagnostic uses of electricity in nervous and cerebral diseases. So far, he very candidly admits, this investigation has borne but little fruit. With the hope of eventually reaching some results of value, he proposes to continue the very arduous and tedious experiments which he has begun.

A long paper by J. WILKIE BURMAN, M.D., on *Heart Disease and Insanity*, embodies the results of great labour and extensive research. We would be glad to believe the results obtained are proportionately valuable. The writer starts with the idea, that as insanity is on the increase, while "heart disease," as a cause of death, appears in slightly increasing proportion in the mortality tables, there is, therefore, probably some connection between the two. Confirmation of this surmise is obtained in the following manner: The counties of England and Wales are divided into two groups, in one of which are all those wherein mortality from heart disease is above the average, and in the other

those wherein it is below the average; and then our attention is directed to the startling fact that the proportion of lunatics to the thousand inhabitants is 2.34 in the first group, and but 2.14 in the second! The importance of this result may be better appreciated when the reader is informed that the ratio varies among these counties, from 3.3 down to 1.3.

Dr. Burman believes that after making due allowance for the greater age of hospital patients, as compared to the population at large, there is still an excess of heart disease among the former class. We believe, however, that it is and must be, impossible numerically to determine just what allowance should be made for the different circumstances of the two classes; and that therefore no trustworthy results can be attained in this matter by the use of figures. Our readers will notice, by turning back a page or two, that Drs. Fothergill and Griesinger hold an opinion precisely opposite to Dr. Burman's.

The large number of hearts carefully examined and weighed at the West Riding Asylum, some five hundred, certainly indicate the general prevalence of some degree of hypertrophy. The male hearts averaged 12.62 ounces, and the female, 10.26: the normal standards being, according to Reid, 11 ounces and 9 ounces. Yet the writer admits that in over 500 insane dying in the Somerset Asylum, the heart-weights were decidedly different, male hearts being 11.14 ounces, and female 8.67. The proportion of perfectly healthy organs among those recorded at the West Riding, was only one-fifth. Among 680 living male patients, signs of cardiac disease were found in 44 per cent. This certainly is a very different state of things from that indicated by Dr. Fothergill, when he speaks of heart-disease as "somewhat rare among the insane."

Dr. Burman's paper is very elaborate and complete. It contains the record of very numerous observations, professes to indicate the comparative frequency of cardiac affection in different forms of insanity, and the various forms and degrees which that affection assumes. Yet, in view of the very ill-grounded assumption with which it begins, and the directly opposite testimony of other observers, we cannot give to it that measure of confidence which we could wish.

Notes on the Condition of the Tympanic Membrane of the Insane is the title of a paper in which Dr. JOHN C. GALTON, a clinical assistant at the Asylum, announces the object, method, and first results of a new line of investigation by him commenced. The idea seems to be that the visible engorgement of certain vessels in the external or cuticular layer, and the internal mucous coat, of the membrana tympani, affords an indication of cerebral hyperæmia similar to that often derived from ophthalmoscopic observations.

The observations so far made tend to show that a dilated condition of these vessels is common in confirmed epileptics; and that such condition can be produced, frequently, by the inhalation of nitrite of amyl, in healthy subjects.

The writer very judiciously points out certain particulars in which this physical examination is freer from disturbing influences than that of the retina. No pain, affright, or suddenly increased stimulus to the organ, here occurs to affect the correctness of the observation.

Dr. ALLBUTT, a contributor to preceding volumes, furnishes a brief article upon the *Obscurer Neuroses of Syphilis*. A few new illustrative cases are presented, but no new truths are elicited.

W. C. S. CLAPHAM, Esq., has compiled from the records of the Asylum the statistics concerning the *Weight of the Brain in the Insane*. Averages of some 700 brains are given according to age, character of disease, and nationality.

The Change of Life and Insanity, by HENRY SUTHERLAND, M.D., is chiefly valuable for its presentation of the facts and conditions concerning some one

hundred female patients of the Asylum, attacked with insanity soon after this epoch.

The volume is completed by another essay by Dr. J. H. JACKSON *On the Anatomical, Physiological, and Pathological Investigation of Epilepsies.*

B. L. R.

ART. XXIII.—*Transactions of State Medical Societies.*

1. *Transactions of the Indiana State Medical Society*, 1873. 8vo. pp. 142.
2. *Transactions of the Medical Association of the State of Alabama*, 1873. 8vo. pp. 112.
3. *Transactions of the Colorado Territorial Medical Society*. 8vo. pp. 56.

1. *Indiana State Medical Society*.—In the opening address by the President, we have some not uninteresting reminiscences of a professional career of forty-eight years in one county of Eastern Indiana. Dr. Pennington believes that a decided change of type has occurred in the diseases of his district. He is inclined to believe this to be in some way connected with the cholera epidemic of 1832. Inflammations, and the febrile symptoms of various diseases were much more intense and more sthenic before that period than now. Free bleeding, antiphlogistics, and mercurial purges, given in the hot stage of intermittent fever, would often, he says, completely arrest the disease, without a second paroxysm. Pleurisy and pneumonia were treated, with almost equal alleged success, by venesection and antimony. "We seldom lost patients from acute diseases. It would have detracted from the standing of a medical man should it have been known that he lost a patient from inflammation. He might lose a patient from sheer debility, and be excusable; but not from acute disease, provided he saw the case in an early stage of the attack." Pregnant admission! The patient had the melancholy satisfaction of knowing that his physician prevented (in the old sense) the natural termination. Notwithstanding his belief in a change of type, Dr. P. thinks that active treatment has been too much supplanted of late by the expectant practice. Brief notices of some of his contemporaries close this address of the President.

An obscure case, supposed to result from *infection with glanders*, is reported. Death occurred after eight months. An instance of protracted presence of a *foreign body in the ear* is narrated by Dr. WRIGHT. A bean was removed from the meatus twenty-two years after the patient (then a child) had placed it there. *Disease of the antrum*, with nervous symptoms, and *annually recurrent abscess* in one eyelid, are cases briefly reported.

Interesting articles discussing *arterial thrombosis* and resulting gangrene, each illustrated by an original case, are contributed, one by Dr. HOUGHTON, and another by Dr. BUTLER.

A report is presented embracing brief statements of health and disease in the different counties. The most noticeable point seems to be the general prevalence, during the cold and wet months, of cerebro-spinal meningitis. Mortality seems, so far as stated, to have been about one in four. Influenza was widely observed as following the epidemic horse-disease.

A case of *rupture of the uterus and vagina*, followed by recovery, has its value sadly marred by ungrammatical and incomprehensible expressions. Absence of any revision, by author or proof-reader, is apparently the cause, but not an excuse for this state of things.

In a notice of the Medical Society publications of some other States we recently ventured to use plain terms in characterizing some of the papers admitted into their volumes by too indulgent committees. We are sorry to say that two articles in this pamphlet are utterly unworthy of print. One of them is simply shameful. Grammar and orthography are outraged in nearly every line, and every possible literary vice is amply illustrated. It is a disgrace to the medical profession in America to allow such effusions to appear under the sanction of State medical societies.

2. The present volume of *Transactions* of the Alabama Association is principally made up of general reports from a few counties, and of the proceedings at the annual meeting, including the amendments then adopted to the constitution. The latter instrument, as revised, is printed in full in the last dozen pages of the pamphlet. We confess to a feeling of profound thankfulness when we discovered that the "Addresses" or "Orations" common to similar publications were here limited to one of each title.

The address of the President, Dr. GEORGE E. KUMPE, is thoroughly sensible and practical, wholly free from "fine writing" and "servid eloquence." It deals briefly with matters of special interest to the physicians of the State, such as epidemics, legislation required, changes in the constitution of the Association, and medical education. We learn that it was upon Dr. Kumpe's motion that an admirable provision was six years ago inserted in the constitution requiring examination, before the censors, of any would-be student, prior to his admission as pupil into the office of a member. Attainments were specified corresponding to those resulting from a good high-school education, with fair acquaintance with English literature and composition. Without a favourable report from the censors, after such examination, no fellow of the Association could receive a student under penalty of six months' suspension. This rule, however, after serving an admirable purpose, has been modified, and we fear practically nullified, in the recent revision. The examination is put into the hands of the censors of *county* societies, and these are allowed ten years' delay before enforcement. Physicians entering the State *may* apply to the censors of the General Association; and the local societies are instructed to examine all new-comers, and withhold all professional recognition from such as do not pass. But this, again, contains the unfortunate "ten years" proviso. And no statement is made of the treatment of non-applicants for the examination. Thus, we are sorry to judge, a step has been taken backward.

Of the inevitable oration what need to speak? Suffice it to say, it is not quite so extreme a specimen as some we have attempted to characterize. Committees on publication should be taught that the profession hold them gravely accountable for that ill-judging easiness of disposition which alone can explain their acts.

In one of the county reports we observe that during ten years the physician writing had not met a single case of scarlatina. Rubeola, however, was common, and at times epidemic.

In a surgical report from Sumter County we find a case of the *removal*, for fibroid disease, of the *entire uterus and both ovaries*. In removing this mass, weighing over six pounds, the whole of the small intestine was lifted out of the abdomen to gain room. Five silk ligatures were applied to arteries, cut close, and allowed to remain. The cavity and bowels being carefully sponged with tepid water, the incisions were closed with silver sutures, covered closely and tightly with bands of adhesive plaster. The operation was attended with severe shock, and followed by violent vomiting. During a paroxysm of retch-

ing a knuckle of intestine protruded through the wound, and was slightly torn by a wire suture. The edges of the rent were fastened to the edges of the wound [printed *womb*] in the abdomen. Symptoms of pyæmia repeatedly occurred. On the tenth day clots and pus were discharged through an incision in the posterior vaginal wall. Incisions in abdomen, except at fistula, healed by first intention. Sutures removed on tenth day, but supporting plasters longer used. This patient fully recovered. Attempts made to close the fistula reduced it to dimensions not practically troublesome. Three years afterwards the patient, a negress of 36-40, was in perfect health, working daily, and enjoying the attentions of her husband as much as ever. The reporters attribute removal of alarming symptoms of septic poisoning to calomel in purgative doses, although using beef essence and stimulants.

A very extreme instance is reported by Dr. WEBB of a *thumb smashed off*, all but a strip of skin one-eighth of an inch wide, in which the soft parts united by first intention [printed *insertion*], while subsequently the bony fracture healed, and the member became as good as new. Perfect exclusion of air and water, with carbolic acid and glycerine over the bandages, are the means which proved so wonderfully efficient.

Cases of *malarial hæmaturia*, and of *malarial neuralgia* of stomach and bowels, as described by Dr. Galt in this Journal, April, 1872, are reported very intelligently by Dr. WEBB. One hundred and twenty grains of quinia, in three doses, within twenty-four hours, were given to a lad of fifteen attacked with hæmaturia. The drug had not been ordered in such large doses by the physician; but the patient was well on the third day.

Five cases of *puerperal convulsions*, successfully treated by *veratrum viride*, are reported. Doses seem rather alarming—twenty to thirty drops, soon repeated; while one gentleman recommends from thirty drops to a teaspoonful every fifteen or twenty minutes. The preparation used is not stated.

3. The annual address of the President of the *Colorado Territorial Medical Society*, without possessing anything specially original, is brief and sensible. The importance of gaining and diffusing accurate knowledge concerning the peculiar climatic features of the territory is earnestly urged upon the members. Investigation into the influence of the climate upon different forms of disease should be thorough and conscientious.

The President has full faith in the curative influence of Colorado climate in asthmatic cases. Hay asthma, too, he believes, is especially sure to be cured, or escaped, by a residence among the mountains.

In a report on surgery by Dr. H. K. STEELE, of Denver, the statement is made that during the late rebellion two surgeons in Georgia employed the "bloodless method" of operating, by first compressing the artery, and then tightly bandaging from the extremity upwards. Their names are given as Sanders and Hawthorn. A more notable illustration of the little real novelty to be met with under the sun is given in a letter dated March 19, 1823, in which a new method of lithotomy is proposed. The anus, says the writer, may easily be dilated sufficiently to receive the whole hand. This being done, with the rectum empty and the bladder filled with mucilaginous liquid, cut through the recto-vesical septum, and remove the stone with the fingers. The operation, we are told, gives little pain, and the wound will heal in forty-eight hours—a catheter being kept in place. It is a pity the writer leaves us in ignorance whether he ever really performed or witnessed this operation. The dilatation of the sphincter to this extent, for some purpose, has been very lately advised and practised as a novel procedure.

It is claimed in this surgical report that wounds heal with unusual rapidity and ease in Colorado. A larger number unite by first intention, fewer become gangrenous, and suppuration, when it occurs, is rapid and healthy. This claim, if substantiated, promises a brilliant future for Colorado surgery.

A report on *Materia Medica* would be more valuable if it treated of vegetable remedies peculiar to the locality, instead of drugs already known and studied.

We learn from another report that catarrhal troubles of the air-passages are rather frequent in this elevated region. Also, as might be expected, epistaxis, especially among persons newly arrived.

Original cases of operation for hare-lip are reported by W. R. WHITEHEAD, M.D. A curious case is described in which supposed fissure of the anus proved, after ether had been administered, to be only an impacted fragment of egg-shell. An attempt to establish a permanent supra-pubic opening into the bladder resulted fatally in fourteen days.

A brief paper by Dr. GEHRUNG points out the advantages of the climate for consumptives. Dryness, cool summer nights, the brilliant sunlight, the temptation to be much in the open air—resulting from the fine weather and the magnificent scenery—are some of these. It is clearly stated, however, that a tolerably vigorous digestive apparatus is essential to the recovery of the consumptive in Colorado. Without this the patient should stay at home. Some very sensible hints as to treatment are appended.

A case is reported by Dr. H. J. PRATT, in which ascites from "chronic Bright's disease" in a child of three years is stated to have been greatly relieved by the constant galvanic current, applied for ten minutes daily. Paracentesis had been performed several times—latterly at an interval of only three days—and the patient was failing. Under the use of a current from eight or twelve cells, directed from front to back, and from side to side, the child's strength improved, and tapping was deferred until three weeks had passed. Afterwards, galvanism being continued, the dropsy gradually lessened. At last the abdomen and limbs became nearly natural in size, though treatment was used only tri-weekly. Albumen and hyaline casts still appeared in the urine, though the child was active and playful.

A few other papers are included in this little volume which call for no notice. While some of its contents are not of especial value, we are glad to notice and heartily commend the entire absence of "fine writing." Noticing the expression of the publishing committee, implying selection of such papers as seemed most worthy, we thank them most heartily for their fearless honesty; for we are certain, from experience and observation, that they must have mortally offended many would-be contributors. We are sorry, however, to see that the proof-reading, if done at all, was not done by a physician.

B. L. R.

ART. XXIV.—*Reports of State Boards of Health.*

1. *Fifth Annual Report of the State Board of Health of Massachusetts.* 1874. 8vo. pp. 550. Boston, 1874.
2. *Second Biennial Report of the State Board of Health of California.* From 1871 to 1873. 8vo. pp. 235. Sacramento, 1873.
3. *First Annual Report of the State Board of Health of Michigan.* For 1873. 8vo. pp. 101. Lansing, 1874.

1. WE have formerly noticed at considerable length several preceding *Health Reports of Massachusetts*. If we deal more briefly with the one for 1873 it

will not be owing to any diminished value or interest. Were the mine less rich we could more readily display its treasures. The same great ability and sound judgment heretofore characterizing the work of the Board are still amply manifested. The student of social science and public hygiene will find nearly every essay, statement, and suggestion worthy of careful attention.

The President, Dr. BOWDITCH, contributes an essay entitled, *Preventive Medicine and the Physician of the Future*. Believing that it will more and more become the chief aim and function of the physician to avert disease, to remove or to hold in check its causes, the writer illustrates what he thinks should be, and in the future will be, the course of a medical man, by a hypothetical case. Assuming that a young couple, hereditarily inclined to phthisis, have a child born to them, he points out the entire conduct of life which the physician of the future will counsel the parents to enforce and the offspring to follow. Printed by itself, this little tract might serve an admirable purpose as a guide to parents all over the country in the rearing of children. Though especially suited to cases where phthisis is to be feared, the great majority of its suggestions are generally applicable and excellent.

A paper *On the Present Condition of Certain Rivers of Massachusetts* continues an investigation already reported upon at considerable length in a preceding volume. As an example of the accuracy and care with which all the work of this Board is performed, we notice that the analyses of the Merrimack water are from some fifty samples taken, at different seasons, at a dozen different localities, by Prof. NICHOLS with his own hand.

Attention is directed by the writer to the dangerous fallacy of assuming the wholesomeness of river-water whenever chemical tests reveal no noxious matter. Cholera excreta may effectually poison water even while wholly undiscoverable by analysis; and it is nearly certain that other injurious substances, in amount too small for detection, may yet cause disease.

The use of river-water for city supplies, and the comparative purity of different streams, are fully discussed.

We are pleased to observe Prof. Nichols's statement that most of the many hundred analyses required in this research were made by a woman, Miss E. H. Swallow. His expression of confidence in the accuracy of her work—being a man not given to extravagant utterances—is high praise, and leads us to inquire whether analytical chemistry may not afford a good and profitable field for female talent and industry.

The great *Brighton Abattoir* established through the efforts of the Board in a suburb of Boston, has proved a success, and is an achievement of which these intelligent and public-spirited men may well be proud. The strict cleanliness observed, and the use of all improvements and devices for preventing and consuming offensive products, have done all that was expected. The establishment is in no way obnoxious. The accommodations afforded are being constantly increased by the addition of new buildings. Our readers may remember that the Board has power to close private slaughter-houses, rendering-houses, etc., when, and only when, they are adjudged nuisances. As fast as increasing density of population leads to such results, the proprietors are encouraged to remove their business to the Brighton abattoir. In the first six months of its use, some 17,000 neat cattle and 150,000 sheep have been there slaughtered, and all products utilized. These numbers are estimated to be, respectively, about one-third and three-fourths of the total city supply. Additions already begun will double the facilities for neat cattle. Butchers, far from being as at first reluctant, are now eager to obtain admission to the abattoir.

An illustrated description of the buildings, and the rules which govern their use, add to the practical value of this paper.

One of the most interesting and valuable essays concerning sanitary matters that we have ever read is that prepared for this report by Dr. J. F. A. ADAMS, of Pittsfield. It is entitled, *The Health of the Farmers of Massachusetts*. It is in part founded on and made up of the answers received from physicians in the rural districts to a circular containing a score of questions relating to all influences and circumstances connected with the health of farmers and their families. It shows, however, on the part of the writer a thorough personal knowledge and much reflection, as to New England country life. The practical conclusion is, that though farmers are as long-lived as any other class, they are subjected to many preventible causes of disease. Bad cookery and deficiency of fresh meat; dampness of location, with ill-drained cellars, and bedrooms on the ground-floor; improper disposal of kitchen refuse, dirty water, and fecal matters, with frequent proximity of drinking well to sources of pollution—these are named as prominent causes of ill health. Want of recreation, too, is considered to have some effect. The writer also believes that the general use of feather beds in country families has a most pernicious influence. First, however, among all harmful circumstances, especially upon the farmers' wives, he places overwork and exposure. Too often a mistaken economy or a false pride, and a wish to be thought "smart," leads to the wife of the farmer performing the whole labour of her house, with part of that of the dairy and poultry-yard. In winter the bedrooms are usually wholly unwarmed, as indeed is every room except the kitchen and the sitting-room, which is tolerably sure to be suffocatingly close and hot from its air-tight stove. For the men, danger arises from the excessive exertions required or prompted by the pressure of work at certain seasons. Too little care is used to avoid getting chilled after being heated by exhausting labour. The influence upon offspring of the mother's continued hard work during pregnancy and lactation is also noticed.

Dr. J. BAXTER UPHAM contributes a paper containing the principal facts concerning the *Epidemic Prevalence of Cerebro-spinal Meningitis*. Over five hundred cases were reported to him. The mortality was about forty-four per cent. The number of males attacked slightly predominated. As to causation, Dr. Upham attaches chief importance to some occult atmospheric influence.

Dr. DERBY contributes a paper on *Hospitals*, which is both very sensible and very timely. Thoroughly recognizing the evils now laid to their charge, he declares that the time has come for a radical change in our modes of construction, whereby these evils shall be corrected, or at least reduced to their lowest possible degree. While for the most part concurring with him, there are a few points in regard to which, it appears to us, his views are scarcely supported by the results of observation or the testimony of men qualified to judge. The importance of the subject will warrant a brief examination of these points.

Dr. Derby declares emphatically that hospitals should be built one story high, and no more. Now, though quite as averse as he is to buildings of three stories, we are yet not quite sure that single storied structures are on the whole the best adapted to the purposes designed. The cost of construction is greater; and the expense of warming, as well as of ventilation, if an efficient system be adopted, is much larger. True, outlay must be disregarded if required for the best hygienic effects; but it does not appear that two stories are so clearly objectionable that we must insist upon a condition calculated to check the multiplication of hospitals. On the contrary, we are inclined to believe that

with two stories we avoid the objections lying against the single and against the three-story arrangement, while securing all the advantages of both.

In the matter of ventilation, Dr. Derby would find it hard to maintain his position in the face of what has been already accomplished. "All systems," he says, "of supplying the needed amounts of fresh air to hospitals of more than one story have failed. The most elaborate contrivances do not meet this fundamental want." We are not aware that many of our general hospitals have been provided with the most approved methods of ventilation. As to the ventilation of the City Hospital at Boston by one of these artificial contrivances, referred to by the writer as a "failure," we are surprised that any one should consider it as other than a most bungling device. It is a curious fact that in the ventilation of our general hospitals, and in those of England as well, we find less recognition of established scientific principles than we do in penitentiaries and insane asylums. More than thirty years ago there was introduced into the prison at Pentonville, near London, a plan for ventilating into a tall chimney, heated to create a current. The success of it was doubted by no one. In most of the hospitals for the insane in this country, the renewal of the air is promoted by some artificial aid, such as fans, or tall chimneys, or steam coils; and we have heard but one opinion respecting the result. There is indeed no mystery about the matter. The laws of pneumatics are as fixed and as well known as those of any other science. In the attempt practically to apply these laws, ignorant builders, it is true, often fail of success by neglect of some essential condition. In the hospital at Taunton, Mass., for instance, the foul air flues are all led into the boiler chimney, which was too short even to procure enough draft for the boilers alone. It certainly is not very complimentary to the mechanical ingenuity of our time, to suppose that we are incompetent to make any effective improvement upon the natural methods of ventilation. The experience already referred to, however, shows that the object has been most satisfactorily accomplished. Indeed, we are amply warranted in saying that any hospital unprovided with efficient artificial means for changing its air, is behind the age. We are consequently much surprised that, in Dr. Derby's single, brief paragraph, on the ventilation of hospitals, he alludes to artificial methods only to condemn them, and is contented to rely on the primitive agency of doors and windows. This is equivalent to a total abandonment of ventilation during weather cold enough to necessitate closure of these but not cold enough to demand fires. Upon this matter, in the construction of hospitals, too much stress can scarcely be laid, since it, more than anything else, will determine the measure of their success. Building committees are always but too ready to catch at any excuse for rejecting arrangements that add to the expense. Medical men, therefore, when consulted by them, should be very cautious how they undervalue alleged improvements in a matter of such importance as that of ventilation. Better service would be done by giving to the proposed methods an intelligent examination, ascertaining the conditions on which depend their effective action or their failure, and then insisting upon the adoption of that plan which promises the best results.

We wish that Dr. Derby had taken occasion to refer to tent hospitals. In reducing the mortality after operations, and in promoting the comfort and hastening the recovery of patients, their superiority to permanent buildings was clearly shown during our late civil war. Indeed we have yet to meet with the first physician who was in the service, who did not have the most favourable impressions concerning them. They were used to some extent last summer in connection with the City Hospital in Boston, greatly to the satisfaction, we

have understood, of the medical staff. In view of this and other recorded experience, we are warranted in saying that tent hospitals¹ constitute an invaluable improvement in our means of treating the sick and wounded during warm weather, and that therefore they should enter into the plans and arrangements of every general hospital hereafter built.

We have said that this paper is timely, because hospitals are now multiplying among us much faster than at any previous period. It will probably not be very long before every town of thirty or forty thousand inhabitants—at least in some parts of our country—will have its general hospital. It is therefore highly important that the public should be furnished with correct ideas respecting their construction. It is truly lamentable to see costly establishments recently erected, entirely destitute of improvements sanctioned by the highest authorities, and even violating in some of their arrangements the first principles of sanitary science.

The Political Economy of Health is the title of an article by Dr. EDWARD JARVIS. As might be expected from the ability and special experience of the writer, we find here a forcible exposition of the policy or economy—viewed from a purely financial stand-point—of all legislation leading to the preservation of life and health. The methods by which governments may labour for the attainment of this object are also clearly set forth. Dr. Jarvis's arguments to prove the true economy of prompt and proper care of the insane, and of all other measures which will diminish illness and prolong the capacity for work, must convince all but the extremely short-sighted.

School Hygiene is the subject of a paper by Dr. FREDERICK WINSOR. Collecting, after the method so largely used by this Board, views, facts, opinions, and answers to a series of interrogatories, from all parts of the State, the writer has produced a deeply interesting and most suggestive essay. There is unfortunately no room for doubt that our schools are not, from material, intellectual, or moral points of view, at all what they ought to be, in order to allow and promote healthful development of the bodies and minds of youth. The subject is far too wide for consideration here. We wish every teacher, every parent, every architect and builder of school-houses, and every committee-man—if by good luck the latter be intelligent enough to understand it—could read this excellent article.

For the assistance of towns about organizing local health-boards, and for newly appointed officers, Dr. AZEL AMES, Jr., gives a clear and practical account of the organization, regulations, and *Work of Local Boards of Health*.

The common and increasing use of *Zinc* or *Galvanized Iron* for the *Storage and Conveyance of Drinking Water*, led the Board to inquire whether any harmful results followed the use of water thus carried. Dr. BOARDMAN, after careful investigation, finds no reasonable ground to believe that the minute amounts of zinc taken up by the water are otherwise than perfectly harmless.

2. *The Second Report of the State Board of Health of California* can scarcely bear comparison with those of some older States. It requires almost a special education to make figures tell the truth; and it certainly requires a well disciplined mind to deduce and exhibit the lessons taught. The essays on various subjects are not distinguished by particular ability or merit. In the one or two papers to which we freely concede originality the novelty is not of a sort to be commended.

¹ In a notice of the *Life of Dr. John Warren*, in the last number of this Journal, we directed attention to successful use of tents and rude log huts for hospital purposes during our Revolution.

The Board sets forth the importance of popularizing sanitary knowledge, and recommends the endowment of a professorship in the State University, and a bureau in the general government for the diffusion of information concerning the public health.

It is claimed that San Francisco is the healthiest great city in the world, and that the State of California fully deserves its high repute as a healthful residence. Without disputing the truth of the conclusions, we yet believe that the materials for accurate inferences are not yet provided. As yet the statistics are not so full and accurate, nor the compilers so skilled and experienced in their difficult task, as to command entire confidence.

The volume includes reports of the condition and working of the various State charities.

A member of the Board submits a scheme for the creation of *probationary asylums* for the immediate reception of persons alleged to be insane. One of these he thinks should exist in each large city. The writer states, with much force and cogency, the causes which too often prevent early resort to the curative agencies of the State hospitals. The distance is frequently very great; the true character of the disease may be in some doubt; the friends may anticipate death or speedy recovery at home; but above all, and adding force to all other reasons, is the difficulty, expense, danger, and publicity which the law attaches to all commitments of the insane to the hospitals. Nominally designed to protect individual liberty, the legal provisions are admirably adopted to deprive of the advantages of early hospital treatment all patients not palpably maniacal. We would naturally suppose that one who appreciated the difficulties and evils as the writer appears to do, would recommend a radical modification of the existing law as to admission to insane hospitals. Instead, however, of such simple methods, we have this somewhat cumbersome device of probationary asylums,—half-way houses on the road to chronic lunacy. To these our author would make admission perfectly easy, apparently requiring no formalities whatever. Detention here can last, however, only ninety days. Here, if longer treatment is desired by friends or others, the ordinary legal examination must be made, and then the patient either released or transferred to a State hospital. The officers of such asylums are also to serve as experts at the call of the courts, and to hold for observation persons pleading insanity as excuse for crime.

The originator of this precious scheme thinks it will cure most genuine cases without further treatment. False imprisonment, too, is prevented: the three months, we suppose, do not count. In some mysterious manner, moreover, it is to save families from the stigma of hereditary insanity, since the probationers are not *declared* or *convicted* as insane.

That the annoying publicity and onerous expense necessitated by existing laws before an insane man can be treated, should suggest some method of evasion is a significant comment on their wisdom. The proposal before us, however, seems to us a mortifying example of ignorance. Very many recent cases might be convalescent after three months' judicious treatment, if knowledge of their probationary position did not prevent; few would be in a condition to be safely discharged; and none could be subjected to the excitement of a trial, hearing evidence of friends and physicians and inflammatory appeals of counsel, perhaps resulting in formal judicial decision of their insanity, with sentence to confinement, no longer probationary, in a distant hospital, without terrible risk of relapse, or aggravation of their malady, and lessened chances of recovery. To this proposition, therefore, we must emphatically express our dissent. Let a hospital be erected near every large city, if possible,

and do not keep patients out of it by absurd and outrageous laws forbidding friends to care for their own sick, but for humanity's sake let us be spared this probationary monstrosity.

A Report upon Insanity and its Jurisprudence, prepared at the request of the Board, contains much that is very objectionable, and calmly sweeps aside the well-settled teachings of all the men who have made these matters their life-long study. Partial insanity, we are told, is attended with disease of only one side of the brain. In "dementia or idiocy" (using the terms as synonymous), both sides are affected. Delirium is due to over-oxidation of ganglionic cells from excess of arterial blood. Acute mania is described as the condition in which inflammation of the brain follows "a previous deranged state of the mind." After much richness of this sort in the way of general instruction, the reader is supposed to be prepared to appreciate the writer's own cases of insanity. These, to the number of five, are therefore given. All recovered, and with such wonderful celerity as to fully warrant the triumphant demand of the author why hospital physicians do not go and do likewise, or, as he puts it, "come up to the present state of scientific knowledge." This so advanced treatment consisted in purgation, bleedings, mercurials, and vaginal injections.

Choice comments on the case of Mrs. Laura Fair, and a critical consideration as to the degree of censure due to a lover who kills a jilting sweetheart, illustrate the breadth and depth of our author's thought on the subject.

Several essays on practical subjects are appended to this volume, which, though not pretending to much originality or to great thoroughness of treatment, are yet adapted to the diffusion of useful information on sanitary matters. The mineral and thermal springs of the State, accidents and explosions in mines, animal food, adulterations, sewerage, and the hygiene of the teeth, are among the subjects thus presented. The laws of the State bearing on hygiene are also printed.

3. A considerable portion of the *First Annual Report of the State Board of Health of Michigan* is taken up with the details of organization and the means adopted to obtain in the future sanitary information from all parts of the State. Unlike the report just noticed, this one has several truly admirable essays on practical subjects. The paper on *illuminating oils* exposes the inadequacy of certain State laws, especially as recently modified in the interest of dealers in these deadly fluids. The insufficiency of the inspection as provided by law, and the practical non-conformity to legal provisions, the terribly dangerous character of many oils freely sold, and the unprincipled charlatanry exhibited in the vending of recipes to make them unexplosive, all are clearly shown and forcibly illustrated. Proper methods of determining the safety of these oils are carefully described.

Wall papers, tags, labels, and confectioners' wrappers, coloured with arsenical green pigments, have here, as in Massachusetts, been proved to produce poisonous effects.

A paper of some thirty pages upon the *Hygiene of School Buildings* is perhaps the most important here published. Warmth, ventilation, light, number of stories, and number of scholars to be received, are all very intelligently treated. Could the principles here laid down be carefully adhered to in American schools, we should confidently anticipate a marked improvement in the health of our young people.

The three papers referred to are by the Secretary, Prof. R. C. KEDZIE, M.D., of the State Agricultural College. We congratulate the State on the possession of so excellent an officer.

B. L. R.

ART. XXV.—*Third Annual Report of the Board of Health of the Health Department of the City of New York, April 11, 1872, to April 30, 1873.* 8vo. pp. 349. New York : D. Appleton & Co., 1873.

THE title of this report seems sufficiently complex to indicate wheels within wheels ; and yet it but faintly foreshadows the complexity of the organization which has for its professed object the preservation and improvement of the health of our great metropolis.

The Board of Health is composed of four police commissioners, four health commissioners, the health officer of the port, the Mayor, the "President," and the "Secretary." The latter officer addresses his introductory note, presenting the report, to the Mayor. In addition to the Board, as above described, we find enumerated a score of "officers of the Board," all of whom are different persons from the Board itself. The chief of these officers, the City Sanitary Inspector and Sanitary Superintendent, resigned during the year, and was succeeded by one of his subordinates.

The general Report of twenty-two pages, also addressed to the Mayor, is signed by Dr. Stephen Smith, who is one of the health commissioners. Then follows an Appendix of over three hundred pages.

Dr. Smith states that the Board is now dissolved by a recent legislative act reorganizing the city government. Without doubting that the late organization has accomplished much good, we hope its successor will be enabled to do yet more. The difficulty has been to enforce the recommendations of the health officers. Causes of disease may be clearly pointed out, and shown to be removable ; but comparatively little benefit results unless power exists to compel preventive action.

The year 1872 was characterized by a mortality in the city one-sixth larger than that of its predecessor. The terrible heat of the week ending July 6, and the epidemic prevalence of cerebro-spinal meningitis and variola, were the chief causes of this increase.

Efforts to prevent the throwing of ashes and garbage into the streets, and to secure the separate removal of these, have not proved successful. The courts did not support the attempts of the officers to secure convictions for the violation of city ordinances.

A good work has been continued in the draining of low districts at the upper part of the city. The Board have power to order such work to be done wherever they shall deem it necessary to the health of the neighbourhood.

The presence of slaughter-houses and rendering establishments continues to be a serious annoyance and injury in many regions.

Some relief from the disgusting and hurtful emanations from the contents of privies undergoing removal has this year been secured by enforcing an ordinance compelling the use of pumps with air-tight hose and close carts. The cold of winter, however, preventing this operation, led to such accumulation by spring as to demand the speediest possible removal. The air-tight apparatus available not being sufficient for the exigency, the Board were obliged to allow a temporary return to the old methods.

Some excellent rules for the purification of street cars seem to have proved practically inoperative. They prohibit cushions, straw, and carriage of dirty clothes or bedding elsewhere than on front platform. Such regulations should be made and enforced in all large cities.

Public urinals are a convenience which our people have been strangely and

culpably slow to demand from the authorities of all great cities. Much suffering and much disease have undoubtedly resulted from the lack of such facilities. Other large cities should at once follow the example of New York in their establishment.

Life-saving apparatus, accessible to the police, along the river fronts, for use when persons are in danger of drowning, is also an admirable institution which might well be copied.

In the report of the City Sanitary Inspector, which begins the Appendix, we find the old complaint as to the want of proper support by the courts. Offenders against the most important sanitary regulations are constantly allowed to escape the penalties properly due to their misdeeds.

In a score of brief reports from district inspectors we find many interesting facts and good suggestions concerning the sanitary conditions of their respective localities. The number of cellar tenements has been much diminished. Their complete abolition is recommended. Privies, especially in connection with tenement-houses, continue to be a source of anxiety to the inspectors. Very great improvement has been made, however, in many hundred cases, by the introduction of a ventilating pipe or shaft, usually of galvanized iron six or eight inches in diameter, extending from the vaults up to a point somewhat above the roof, and terminating in a turn-cap, to create a draft. Believing, as we do, that none of these caps can be serviceable in a calm, we should like to see more stress laid on the importance of placing these flues in or against the chimney-stack. It is encouraging to learn that landlords are beginning to introduce this improvement voluntarily, and that tenants give preference to houses thus provided. One inspector believes ordinary privies, thus ventilated, superior in practice to water-closets with sewer connections. However great may be the theoretical advantages of the latter, they are nullified by the tendency to become obstructed through improper use and insufficient flushing.

The difficulties in the way of prompt and cleanly removal of ashes and garbage are spoken of by all as one of the grand obstacles to general neatness and purity. Another obstacle, consisting in the terrible filth of the streets, has been appreciably lessened of late since street cleaning has been done by the police department.

From one district, formerly very damp, comes striking testimony to the benefit resulting from the thorough under-drainage ordered by the Board. Where scarcely a family formerly escaped malarial disease, and often four or five members of one household were ill together, now a case is rarely heard of.

The improper construction and the over-crowding of the public schools is a subject of serious complaint.

The chemist of the Board makes a valuable suggestion as to the use, as disinfectants, of certain waste products, from various manufactories, and from the galvanic batteries of the police and fire telegraphs.

From the Bureau of Records again proceed bitter complaints against clergymen for their culpable neglect to make returns of marriages. While births annually recorded have increased in five years from 13,947 to 22,068, the marriages have changed only from 8,695 to 8,954!

The mortality for the year 1872 was, as we before stated, high throughout. In addition to the special causes mentioned there seems to have been an unusually fatal prevalence of the ordinary diseases of the seasons. The most striking fact, however, is the terrible mortality of the "hot week." The deaths on the seven days ending July 6, numbered 1591, against 807 of the previous week. Of the former, 733 were infants under a year old. Some two hundred other deaths could be attributed only to the extreme heat. A chart

is presented to exhibit the relations of these last to the mean temperature, highest in sun and highest in shade, mean barometer, and mean humidity, for each day of this remarkable period. Much moisture in the air seems to have increased decidedly the fatal influence of solar heat.

The mortality tables for the year are extremely minute and elaborate. By two magnificent coloured charts, there are shown for every day in the year the relations of the total number of deaths, and of the numbers caused by phthisical, by zymotic, and by diarrhoeal affections, to daily mean temperature and daily range, to weekly mean of barometer, to daily humidity, and to daily rain-fall.

The death-rate for 1872, estimating the population at one million, is 32.6 per thousand inhabitants. As compared to figures as given by cities here and abroad, this is high for a place in the northern temperate zone. But the innumerable sources of error deprive these comparisons of much value except in the individual cases where we know the data to be trustworthy. Providence, R. I., has for years possessed an admirable registration; and her death-rate is only 22.1. There, however, the topography of the place prevents the necessary crowding of the population which occurs in New York and in Boston, where the rate is 30.5. We doubt the correctness of the rates assigned to St. Louis, 20.1; and to Cincinnati, 20.5; and to Buffalo, 17.3. If these and similar figures from many cities can be shown to be nearly correct, their sanitary measures should be carefully copied.

Tables exhibiting mortality from special diseases in different wards and public institutions; from intemperance in different races, ages, and in different manners; from cancerous affections, according to sex, age, race, and organ; from phthisis, under like variety of conditions—these and several others present the grim facts under many aspects.

Tables exhibiting facts concerning marriages and births require no comment beyond that already made.

An investigation into the recent wide-spread disease among horses was made by order of this Board. The result is here given in a long paper embodying a *resumé* of facts as to former epizootics; the history of the appearance and spread of the one recently among us; statistics of mortality in the New York stables; description of the disease as there observed; results of examination of blood, urine, mucus, and other fluids, and of *post-mortem* appearances. The paper is illustrated by six handsome coloured lithographs of morbid appearances.

The writer regards the disease as the exact counterpart to epidemic influenza. While admitting that the simultaneous seizure of horses all over the city did not arise from contagion, the writer yet maintains that it spread from city to city, and State to State, solely and uniformly through the transportation of the poison by a diseased subject. Thus it would seem that he believes some occult atmospheric condition to be necessary to the prevalence of the disease, yet not of itself able to originate it; for he says that strict quarantine inevitably protects. In other words, contagion is necessary, while yet in a given city or stable the spread of the disease confessedly outruns the possibility of contagion.

Some inquiries as to adulterations have been made during this year. Previous examinations having shown lump and brown sugars to be pure, the observations were now extended to powdered white sugars. Over a hundred samples were examined without discovering any other contamination than dirt from exposure to air and dust. "Salæratum," so called, is now as often the bicarbonate of soda as it is of potash; and the former salt is not chemically

pure. Practically, however, very little adulteration was detected. Out of 28 samples, one was mixed with flour and another with *terra alba*, or sulphate of lime. Cream-tartar, however, was uniformly adulterated with the white earth, to the extent generally of more than 50 per cent., and in one case to that of 86 per cent. ! Baking powders, of mixed salts, were found to be effective and properly made. These are believed to be safer for the consumer than the extemporaneous mixture of the salts as usually obtainable.

In confectionery, the examiner believes arsenical green colourings to be obsolete. Yellows, and orange tints, however, are often due to lead salts. Gypsum is much used to obtain bulk and weight cheaply, and is a reprehensible and injurious ingredient.

Some very interesting observations on the quality of the air in public buildings, schools, prisons, factories, etc., are absolutely startling in their revelations of the prevailing ignorance and inappreciation of the whole subject of ventilation. Some good suggestions are here offered upon the need and means of providing school-houses with fresh and warm air.

An inspector charged with the examination of inhabited cellars reports them as peculiarly bad, and strongly recommends that they be no longer tolerated at all.

Respecting influence of trades and handicrafts upon health, nothing new is elicited, unless it be some facts indicating that young girls working in tobacco factories are retarded in their development.

A special report on school buildings is very sad reading. Taken in connection with the experiments on air in public buildings, it reveals a terrible source of debility, arrested development, disease, and suffering. Of schools, the writer says "not one has proper and adequate means for thorough and perfect ventilation." One basement room, without cellar, has one hundred pupils, with only one window, looking on a three story building eight feet distant. So crowded are the rooms as to furnish only from sixty down to forty cubic feet of space to each pupil. This, we need not remark, is shamefully inadequate. From 600 to 1200 cubic feet per patient, with frequent renewal, is the air space usually considered essential in hospitals. The amount of perfectly fresh air which ought to be supplied to each pair of human lungs is variously estimated at from $2\frac{1}{2}$ up to 20 cubic feet *per minute*. Fancy then the condition and the prospects of these wretched children, breathing their pitiful two cubic yards of tainted atmosphere over and over again, say some two or three thousand times ! Flues, built in the side walls are, as the writer correctly states, utterly useless, unless some efficient means of creating a draft in them is devised and kept in operation. The recommendations of the writer, though tending towards improvement, are yet very inadequate.

As if the carbonic acid, and the animal exhalations, from the lungs and bodies of the pupils were not bad enough, we are told that privies and urinals are of the worst construction and of improper location. The walls and ceilings, also, are generally filthy.

As another sad instance of the public ignorance and neglect of the laws of health regarding the air we breathe, we have a brief but most suggestive report upon the city prison known as "The Tombs." Four prisoners occupy each cell of 726 cubic feet, intended for one. The system of ventilation, as explained, and illustrated by diagrams, is a perfect example of "how not to do it." The warming is inadequate, and at expense of purity of air. The walls are damp, giving the cells an atmosphere of a vault-like and musty smell. The pipes carrying away excrement from each cell are untrapped, and open into a gently sloping soil-pipe which runs around each tier of cells. All open into

a single discharge-pipe leading to the sewer. There are no traps, in the whole system. Gases from the sewers pass freely into the cells. Malicious or accidental obstructions, originating from one cell, occasion overflow of filth in the cells behind it, and require considerable time and labour for their discovery and removal.

A very carefully written paper by R. W. Taylor, M.D., considers the question whether syphilitic infection has been or may be propagated by the Jewish rite of circumcision. The conclusion is that, in the cases reported, some were not syphilitic, and another was otherwise caused. The possibility of communicating infection by the operation is acknowledged. Certain parts of the procedure, as sometimes conducted, are recommended to be modified.

In closing our notice of this valuable publication, we would suggest that a good, analytical table of contents, in addition to the index, would add much to the usefulness of the work. As it is, we are obliged to turn over all the pages to discover the subjects treated. The volume is well printed, well bound, and apparently carefully compiled. The charts, which in this as in the preceding number are a prominent feature, are admirably executed. B. L. R.

ART. XXVI.—*The Toner Lectures, instituted to Encourage the Discovery of New Truths for the Advancement of Medicine.* Lecture I.—*On the Structure of Cancerous Tumours, and the Mode in which Adjacent Parts are Invaded.* By J. J. WOODWARD, Assistant Surgeon U. S. A. Delivered March 28, 1873. Washington: Smithsonian Institution. November, 1873.

THE "Toner Lectures," we learn, have been established by that public-spirited physician, Dr. John M. Toner, of Washington, D. C., who has placed in the hands of a Board of Trustees a fund "the interest of which is to be applied for at least two annual memoirs or essays relative to some branch of medical science, and containing some new truth fully established by experiment or observation."

The first of these admirably designed lectures was delivered March 28, 1873, by the well-known microscopist, Dr. J. J. Woodward, U. S. Army, on the Physiological Anatomy of Cancer, and has been published by the Smithsonian Institution in pamphlet form. The subject has been well chosen, for, apart from purely scientific interest, the vast clinical importance of cancerous growths cries aloud to the profession to search, by every means, for accurate knowledge concerning their nature and mode of development, in the hope that something useful for the sufferer and the surgeon to know may yet come out of the labours of the histologist.

The lecture opens with an historical *résumé* of the different opinions advanced by the more prominent original investigators on the subject of the histogenesis of cancerous tumours. Thus we have, first, the idea of free cell-formation advanced by the early followers of Schwann, and upheld by Rokitsky. This now exploded theory was swept away chiefly through the labours of Virchow, who, secure in the general principle of "*omnis cellula e cellula*," ascribed the immediate parentage of the epithelioid elements of cancer to the normal connective-tissue corpuscles of the affected part, and logically contended for the purely local origin and nature of a primary tumour, whether cancerous or otherwise. Next follow the far-reaching discoveries of

Von Recklinghausen and Cohnheim concerning the free migration of leucocytes, and the important rôle they play in new tissue-productions—discoveries which necessarily invalidate Virchow's notion concerning the strictly family relation, so to speak, of all new cell-forms to the original cellular elements of the affected territory. The whole subject of the histogenesis of morbid growths becomes thus opened anew; and next we have Thiersch, in 1865, claiming that epithelial cancers, at least, are derived purely from cell-multiplication of ordinary epithelium—a doctrine which Waldeyer, in 1867, extended to all cancers, finding the epithelial parents of the cells of deep-seated carcinomata in the normal gland-cells. In 1869 Köster observed that the cylindrical cell-masses of cancers anastomose freely, and in many places, at least, are covered by the peculiar endothelium of the lymph-channels, whence he inferred that the latter elements are the parents of the morbid growth. Next Classen, in 1870, boldly struck out and advanced the idea that migrated white blood-corpuscles alone are responsible for the cancerous cell-foundlings, and Dr. Woodward tells us that his own partial advocacy of the same view two years later was based upon original observations, and was made without knowledge of Classen's paper. In 1872, again, Waldeyer reviewed the whole subject, and while admitting Köster's observation of the fact that the cancer-cylinders lie in the lymph-channels, and that the small-celled infiltration of the tissues invaded by cancer is due to accumulation of migrating leucocytes, yet adhered to his original doctrine of the strictly epithelial parentage of the cancer cell-elements proper.

Such being the conflicting opinions of modern histologists, Dr. Woodward cites the fact that Billroth advocates the views of Waldeyer, and of Rindfleisch he says:—

“Rindfleisch entertains opinions more nearly allied to those of Classen. Rindfleisch admits that, perhaps, in cancers involving glands, the glandular epithelium may undergo fissiparous multiplication, and so contribute somewhat—though only, as he thinks, to a moderate extent—to the formation of the cancer-cylinders. But he thinks that a far larger part is played by migrated white blood-corpuscles, which, instead of being transformed into pus or connective-tissue, as in inflammation, accumulate in the lymphatic passages, and are metamorphosed into epithelium-like elements.”

This, however, is hardly a correct statement of Rindfleisch's views, as expressed in his *Text-book of Pathological Histology*, quoted by Dr. Woodward. This author, it must be remembered, considers that there are two modes of normal growth of epithelium—one “primary,” whereby the youngest and innermost cells of an epithelial layer are derived from epithelioid transformation of wandering formative cells from the underlying connective tissue, under the influence of actual contact of such cells with the epithelium-tissue itself; the other “secondary,” being simply multiplication by division of the pre-existing epithelial cells. Now, all cancers are, for Rindfleisch, “abnormal effects of epithelial growth,” and as such he defines and classifies them. Dividing them generally into glandular and epithelial cancers, he says of the whole group of the former, “that the new formation proceeds from the glandular epithelium, has of late been established by numerous investigations. The cells multiply by division.” (*Pathological Histology*, American edition, p. 181.) Taking up, then, the varieties of glandular carcinomata, he distinctly affirms of the cells of soft cancer that “they prove themselves as the genuine offspring of the intestinal glandular plate.” (*l. c.*, p. 161.) In treating of the “telangiectatic” and “sarcomatous” forms he makes no special mention of the mode of origin of their cells, and only in connection with hard cancers and epitheliomata

does he seem to consider that his "primary" mode of epithelial growth by epithelioid transformation of formative cells is largely concerned in the begetting of the cancer-elements. And even here, it must be borne in mind, such cell-genesis is simply a *mode of growth of epithelium*, since Rindfleisch carefully points out that such epithelioid transformation of formative cells from the connective tissue layer can only take place by contact with pre-existing true epithelium. And even in hard cancer he distinctly says that "the *active* behaviour of the glandular epithelium . . . is and remains the peculiar source of morbid action." (*l. c.*, p. 167.) For Rindfleisch thus, as for Waldeyer, all cancers are of epithelial nature and origin, and grow after the manner of ordinary epithelial tissue, only Rindfleisch admits an epithelioid transformation of leucocytes as one factor in such normal growth. Classen, on the contrary, if we understand him aright, cuts loose entirely from the idea of cancer being *necessarily* of epithelial origin, and recognizes an independent cancerous transformation of leucocytes, whose cell-type will be epithelial if the site of the original morbid action happen to be in contiguity with normal epithelial tissue, or of the character of connective tissue, if the same site be in a tissue derived from the middle germinal layer. While, therefore, both Rindfleisch and Classen recognize the bald fact of the direct transformation of a leucocyte into a cancer-cell, their ideas of its signification, and of the general physiology of the morbid growth, are essentially different.

Dr. Woodward next proceeds to the original part of the lecture, which consists of a detailed description of the anatomy of cancer, illustrated by photomicrographs from sections of tumours, exhibited by means of a stereopticon. Searching through these anatomical details for Dr. Woodward's position on the vexed question of the histogenesis of the cancer-cells, we find that, following Rindfleisch, he admits, as a matter of fact, both epithelial cell-multiplication and direct transformation of leucocytes into cancer-elements; but there he stops, declining to uphold or advance any hypothesis of the general scheme of cancer-development as a pathological process. We fully commend his caution, but at the same time we utterly fail to see how this lecture, instructive though it be to those unfamiliar with the present state of knowledge on the subject, fulfils the high requirement of the "Toner Lecture" prospectus, of "containing some *new truth fully established by experiment or observation.*"

E. C.

ART. XXVII.—*On the Government of the Retreat for the Insane, at Hartford, Connecticut.* Printed for private use. Hartford, Connecticut, 1874.

WE once thought that the question agitated in this pamphlet had been set at rest by the results of an abundant experience, both here and abroad. It seems to be a characteristic of our times to consider nothing as settled, and to reopen old controversies, though without the aid of additional knowledge. It is a cheap way of distinction, attractive to a certain class of minds, to revive an obsolete doctrine or practice, and invest the arguments in its favour with an air of novelty, while completely ignoring those which sealed its fate with a former generation. This is easily done, and makes the desired impression on those whose vanity is flattered by the idea that differing from the simple souls who cling to an established belief is a proof of superior wisdom. It would seem as if half the intellectual labour in the world was used in combating errors

supposed to have been killed, but rising up from time to time, refusing to stay killed.

The question with which this pamphlet is concerned is closely connected with the proper working of a very interesting class of our institutions—the hospitals for the insane. It is a fact, though its significance is but dimly seen by the outside world, that their success depends very much on the manner in which their service is organized. A hospital should be like a piece of machinery, in which every part holds certain relations to every other part, and all act harmoniously in the production of a special end. Unlike a machine, however, the forces required in the management of a hospital can be kept in their proper relations and adjusted as occasions require, only by a controlling force paramount to every other. The thing to be wrought out is definite and simple, and every movement, many and diverse as they are, all tend to its accomplishment. This being so, it is obvious that the whole establishment should be guided and controlled by a single spirit, competent to the work and responsible for the result. If the superintendent is just what he should be, the impress of his character should be seen in every direction, in every architectural arrangement, in every contrivance for occupying the attention of his patients, in every appliance for maintaining their physical powers in the best hygienic condition, and in the ways and manners of every one engaged in the service. Nothing can be more preposterous than the idea that any of the agencies employed in effecting the purposes of a hospital can be well managed by joint but independent powers. Any attempt of this kind must inevitably be followed by collisions and an imperfect result. These views are strongly confirmed by the testimony of many present and past superintendents in letters addressed to Dr. Denny in reference to the position he has taken.

The idea that more than one independent power should be employed in the executive duties of hospitals for the insane, must have arisen from the crudest conceptions of the nature of the work allotted to them, and a glance at their history abundantly shows that such is the fact. Not many years ago insanity, considered as an object of medical treatment, was regarded almost exclusively in its physical aspects, and in the little account that was made of the mental affection, the idea of depravity and unlicensed passion was more prominent than that of disease. From such views sprang the arrangements usually adopted in early times for the management of a hospital for the insane. The executive officer whose authority was paramount in the house was the steward or warden, who organized and directed the service, who ordered whatever was done or not done for the patients, excepting in the matter of drugs, and who ruled over all, sane and insane, with an autocratic hand. He might, or as is most likely, he might not, have had any knowledge of the nature or manifestations of insanity. Nor did he much need it, for the whole moral treatment, all of which was entrusted to him, consisted chiefly in imposing such restraint or punishment as the case might seem to require, while the medical treatment was prescribed by some physician of the neighbourhood, who visited the house two or three times a week and ordered the sort of medication that happened to be in vogue, such as bleeding, purgation, cold applications to the head, and shaving of the scalp, in the recent cases, with systematic purgation all around in the spring. Under such management the most frightful abuses were unavoidable. To the rude and ignorant master of the house the stormy manifestations of disease seemed to be only outbreaks of bad temper and angry passion, to be met by straight waistcoats, shower-baths, low diet, and the fiercest threats, if not blows. Luckily, the source of these evils came to be recognized at last, and the proper remedy found by a change in the organization of the service,

whereby the hospital was placed in charge of a medical man qualified by a suitable training and high professional aims, who governed the whole. He resided in the house, appointed the attendants, prescribed their duties, was conversant with all the details of the service, exacted implicit obedience to his authority, and in every arrangement had reference to the accomplishment, in the completest manner, of the special ends of the institution. Not that this change occurred at once, *per saltum*, as it were, for in most cases there was a transition period, when the steward continued to be independent in some particulars, and the managers or guardians occasionally took a turn at the executive wheel, as they do to this day at the Blockley, in Philadelphia, and at Blackwell's Island, in New York, where, for instance, they appoint and discharge attendants when some needy protégé is to be provided for. Our hospitals having come into existence towards the close of this period were, with a few exceptions, organized after the improved methods. Among the few in which some features of the old system were retained was the "Retreat," a corporate institution at Hartford, Connecticut; and though they have ever been a source of trouble and bad feelings, yet the board of managers has never been willing to recognize the entire and exclusive control of the superintendent. A year or two ago, Dr. Butler, after thirty years of faithful service, resigned, and Dr. Denny, eminently fitted by character and training for the work before him, was appointed his successor. In order to prevent a renewal of the old grievances, this gentleman endeavored to obtain from the Board of Managers such an alteration or construction of the by-laws as would give him a control paramount to and independent of every other. Failing to obtain it, he promptly resigned his charge.

The pamphlet before us is occupied chiefly with correspondence between Dr. Denny and the Board of Managers, and letters from many eminent superintendents, thoroughly sustaining him in the position he had assumed. It constitutes a valuable contribution to the cause of hospital improvement, and we hope its lessons will be carefully pondered by all who are connected with the direction of these institutions.

We do not suppose that the stand taken by Dr. Denny will be universally approved of. Some will contend that for all practical purposes he was thoroughly independent, and that it was a matter of caprice or fastidiousness to seek for control beyond his special sphere. Others, with little regard for the merits of the question, are constitutionally opposed to any one-man power, and they, of course, will not be likely to uphold him. With these it would be useless to argue, but to the former we take the opportunity to present some considerations that may have escaped their notice, for the functions of the superintendent are so peculiar that their whole breadth and scope are not readily perceived by the ordinary observer.

In the little world of which he is the head no person or thing is foreign to the single and special purpose which it is his business to accomplish—the restoration of the disordered mind. Not the cook in the kitchen, nor the farmer on the grounds, nor the mechanic in the shops, nor the engineer in charge of the boilers, should work independently of his oversight and control. And yet if the views of the Hartford managers are correct—if any of the employés could be properly placed beyond his immediate control—it might certainly be supposed to be these. But let us look a little more closely at the parts these persons have to perform in the daily economy of a hospital. No one will deny that the efficiency of a hospital depends very much on a well-ordered kitchen. Not only the present comfort and satisfaction of the patient, but his final restoration, are involved in a supply of food intelligently cooked, skilfully varied,

promptly and properly served. Work on the farm or in the shops, judiciously managed, is a restorative agency of incalculable value. The proper distribution of air and heat is scarcely surpassed by anything else, as everybody knows, in its hygienic influence. And yet in a hospital governed like the "Retreat" the Superintendent's wishes in regard to these things may be imperfectly met, if not completely frustrated, simply because the persons concerned in them are not responsible to him. If he enters the kitchen it is only on sufferance, and if his directions are followed it is only as a matter of favour, not of right. If he finds his patients when out at work are badly treated or neglected by the farm hands, his complaints may be treated as unreasonable or whimsical, and no amendment follows. If the duty of warming or ventilating the house is badly done, he may be powerless to make it any better. And the reason for all this is obvious enough. The Superintendent fails to obtain the best performance of duties of the highest importance to his success, because the persons employed for the purpose are accountable to somebody else. They look for control and direction to one who alone has the power to enforce his wishes by the strongest of arguments—summary discharge. Very likely, flagrant offences, highly improper behaviour, would be suitably noticed when reported, but this implies that the Superintendent must appeal to another for the redress of an evil which is frustrating the very object which it is his special business to accomplish. All this tends to lower him in the estimation of those around him; and by impairing the prestige of his office, his power for good is materially diminished. For let it be understood that he rules his little world with a divided empire; that in certain quarters there is a power fully equal to his own; that his word is not law in every part of it, and from that moment all true discipline departs, confidence is impaired, and his hands are crippled.

There is another aspect of the question which furnishes a conclusive argument in favour of these views. The material interests of a hospital require that there should be but one head, ordering its affairs by an intelligent appreciation of its resources and their judicious application to the various means that are employed to promote its purposes. How can such a result be expected when two heads are using those resources with little if any reference to each other? How can one appropriate money for a piece of furniture, or a carriage, or an aquarium, for the gratification of his patients, while, for anything he may know, every available means may be required by the other to pay for fancy stock, or new agricultural implements, or repairs on the kitchen? It is for the Superintendent to decide, and for him alone, between conflicting wants, and to say which shall be met at once and which postponed. Even in regard to the work on the farm, which may seem at first sight quite remote from his special sphere of duty, his supreme control may be required to direct it in the manner best calculated to promote the good of the patients. He wishes, for instance, the amplest supply of fruits, flowers, and all the delights of the garden. The steward believes that such things do not pay, and lays out for crops of mangolds and potatoes, hay and fodder. The one believes the farm should furnish an abundant supply of milk as a thing eminently conducive to economy and good health. The other prefers to turn his crops into some other shape. We might multiply these illustrations of the necessity of a supreme undivided control on the part of the Superintendent, responsible of course to the Managers; but if these are not sufficient to convince every fair-minded man, it would be useless to mention any more, and here we leave the subject, relying on the good sense of our readers to lead them to a just conclusion.

We cannot forego the opportunity to render to Dr. Denny our thanks for this noble vindication of the right and true; and in saying this we express, we

doubt not, the sentiment of the profession at large. Such devotion to a principle, involving as it did the sacrifice of a valuable appointment, will be held in grateful remembrance as long as any respect shall remain for elevated aims, an honourable ambition, and a triumph over mean and mercenary considerations.

I. R.

ART. XXVIII.—*Lectures on the Diseases of Infancy and Childhood.* By CHARLES WEST, M.D., F.R.C.P., Physician to the Hospital for Sick Children. Fifth American from the Sixth revised and enlarged English edition. 8vo. pp. 678. Philadelphia: Henry C. Lea, 1874.

THIS book represents the experience of one who has been peculiarly fortunate in having an extensive hospital and private practice in children's diseases, extending through more than a quarter of a century, and whose clinical deductions are confirmed by the records of nearly 2000 cases and 600 post-mortem examinations. Knowing this, it is with increased interest that we turn to a new edition of it to learn what influence changes in medical opinion have exerted upon the author's practice.

Although we find Dr. West is unwilling to believe that all his former observations were erroneous, and that his old faith was entirely misplaced, yet he frankly acknowledges that his practice now differs much from what it was a quarter of a century ago; that he depletes less, that he has less faith in mercury, that he employs antimony more rarely, that he has more confidence in Nature's powers, less reliance on his own resources. Yet he still believes that mercury possesses a peculiar and *specific* power in controlling acute inflammation of the serous membranes of the chest and abdomen; and that both acute pleurisy and acute peritonitis yield to a combination of calomel and opium more speedily than to opium alone. He believes that in severe inflammation of the mucous membrane of the large intestine—in other words, in dysentery in childhood—the part borne by mercury in its cure is at least of as much moment as that of opium, with which it is right to combine it; but the latter alone will fail when the two together will save the patient.

In laryngeal inflammation, or true croup, after the first active symptoms have subsided, Dr. West holds that mercury often plays an important part in its more chronic stages; and he still holds to the belief that in some forms of chronic non-tuberculous consolidation of the lung, recovery is expedited by the careful employment of mercurials. He does not regard mercury as of any service in acute affections of the pulmonary tissue, nor in any form of bronchitis, but still regards it as of service in acute pericarditis.

These are not the views usually taught at the present day, indeed quite the contrary are promulgated by the most recent American authors (Austin Flint, J. F. Meigs, and J. Lewis Smith), but coming from such high authority, and as the result of an extensive clinical experience, they certainly claim from us a careful and unbiassed test at the bedside.

This book contains such rich stores of clinical experience that we find ourselves well repaid in looking over its pages, particularly those concerning the treatment of diseases. In discussing the treatment of the formidable head symptoms which usher in the eruptive fevers, the author says:—

"I have of late years tried the use of the wet sheet in these cases, and with results all the more satisfactory, since they are obtained without any of that depression of the vital powers inseparable from the free abstraction of blood.

I have seen the packing in the wet sheet followed, in the course of one or two hours, by an abatement of temperature, a cessation of convulsions, and a return of consciousness, as remarkable as I have ever observed follow from even a copious bleeding, while the action of the skin has certainly been more speedily established, and the appearance of the eruption has been brought about sooner and more satisfactorily than by any other means with which I am acquainted. While, therefore, I would not say that depletion ought never to be practised, and while, if hydropathy failed, I should still have recourse to it, I no longer employ, nor should I advise that free depletion to which, in ignorance of these other means, I was accustomed to have recourse."

In cases of general febrile disturbance accompanied with excitement of the brain from whatever cause, Dr. West has seen much good result from the administration of small doses of aconite—half a minim every four hours to an infant of a year old. Hydrate of chloral is another remedy which he finds in these cases usually to act as a sedative, better even than any preparation of opium, obtaining sleep especially in those cases where wakefulness is due to restlessness, rather than to pain.

Bromide of potassium and hydrate of chloral our author esteems of great value; either alone or in combination they seem to exercise special influence in producing sleep in various disorders of the nervous system, such as spasm of the glottis in infancy, or chorea in subsequent childhood, and he finds them both free from the special risks of opium.

"They are of equal service in overcoming the persistent sleeplessness for which in delicate children it sometimes happens that no definite cause can be discovered. In cases where cerebral disease is suspected they may be given with advantage, and without obscuring the symptoms, and also in the restlessness of fever, provided the stimulating power of opium is not indicated. They do not, however, annul pain as opium does, even though they may produce sleep; the sleep is not refreshing if the actual suffering is severe when the patient awakes; and as they both tend to depress the circulation, they must not be given in cases of great exhaustion, nor, I think, when there is serious organic disease of the heart."

Dr. West also speaks of "the marvellous power in controlling convulsions" which these two drugs, either alone or combined, possess; particularly has this been observed in cases where there was no ground for suspecting organic disease, and where there were no distinct indications for treatment beyond such as were furnished by the frequent recurrence of the convulsions.

"Of the two remedies, the bromide has appeared to me the more reliable; but in order to obtain decided results from it, it needs to be given in doses larger than those which are commonly employed; as, for instance, from two to three grains every four hours for a child of one year old, and from three to five grains from the age of three to five. It does not give earnest of good within the first thirty-six hours, there is little use in continuing it, though it may still be persevered with, with the addition of one or two grains of hydrate of chloral. The depressing effects of the bromide must not be lost sight of; and either their occurrence, or the failure of the remedy, may compel us to use chloral in similar doses, though at an interval of every six or eight, instead of every four hours. I think, however, that on the whole I have obtained the best results from the bromide every four or six hours, accompanied with a single full dose of chloral every night at bedtime."

Dr. West's testimony to the value of bromide of potassium in the treatment of epilepsy is very opportune, and we are inclined to believe that it coincides with the experience of many on this side of the Atlantic. He finds that it seldom fails within the first few days of its administration to arrest the frequency of the attacks, and now and then it has seemed entirely to prevent them; this latter result, however, he has observed more frequently in cases of persist-

ent, frequently repeated infantile convulsions than in the distinct epilepsy of childhood, though even here he has had some few apparent successes. In the great majority of cases the amendment, though very marked at first, has not entirely maintained itself; the system has after a time become habituated to the remedy, and after several augmentations of the dose, each of which has seemed to renew the old influence, he has been compelled to discontinue it in consequence of the depression of the pulse, the general loss of power, and the appearance of the peculiar pustular eruption which occasionally follows its long-continued use. In other cases the agent which at first worked wonders ceased to have any influence; the constitution tolerated the increased dose, but so did the disease; the patient continued to take the medicine, but the fits, though once controlled, returned after a time just as before.

Still, with all these drawbacks, the bromide remains the only agent which in Dr. West's hands has made the least approach to the character of a specific in the treatment of epilepsy.

"I always employ it when I can find no distinct indication to guide me. I confess that I use it empirically, for I have found no means by which to distinguish beforehand the cases where the bromide will do permanent good from the other apparently similar but much more common instances in which its influence is merely temporary."

In the chapter on chorea Dr. West rejects, for certainly sufficient reasons, the theory of embolism as the cause in all, or even a majority, of the cases of the affection, and he still places it in the same category with the majority of the convulsive affections of early life, believing that its phenomena depend on irritation, direct or indirect, of the nervous system.

The only remedy which has appeared to him to exert any specific power over the disease is the sulphate of zinc, beginning with half a grain three times a day, and increasing the dose by a grain daily, until the dose is arrived at which appears to fairly control the movements. And it is not unusual to find a remarkable tolerance of the remedy established, and as much as 10, 15, or 20 grains taken three or four times a day with perfect impunity. Dr. West has never increased the dose beyond the last amount, thinking that if three weeks' trial, at the end of which so large a dose was arrived at, produced no result, the remedy might be considered to have failed.

Since the publication of the preceding edition Dr. West has become an ardent advocate of the operation of paracentesis of the chest in cases of pleurisy, and knows of no valid arguments against it. In no single instance has he ever regretted its performance, but has often been sorry that he did not have recourse to it sooner. He thinks it should be resorted to in every case of urgent dyspnoea, accompanied with effusion into the chest, where there is reason for believing that great, even though only temporary, relief would be obtained by the evacuation of the fluid; in any case of acute pleurisy in which, however early it may be in the disease, there is fluid in quantity sufficient to modify the form of the chest or to produce displacement of the viscera, the child at the same time suffering from cough, distress, or dyspnoea. The chest ought also to be tapped even independent of those symptoms of constitutional disturbance, if the effused fluid should remain stationary for three or four days in spite of treatment; and he believes that, even though nature might eventually have accomplished the absorption of the fluid without this intervention, recovery will take place more speedily as well as more surely in consequence of the tapping.

In cases of doubt, Dr. West recommends that the diagnosis be verified by puncture of the chest with a hypodermic syringe, and in case of tapping, the trocar to be introduced in the fourth or fifth interspace, and about two inches

outside the nipple, unless there should be some special reason for choosing some other position.

The general rules given for the performance of the operation, and for the after-treatment are full and judicious. Dr. West does not, as a general rule, wash out the chest; and has not found that those iodine injections which greatly modify the secretion from a simple serous cyst have any influence on that poured out by a pyogenic membrane. But whenever the discharge is specially offensive, he washes out the pleural cavity first with warm water, and afterwards with a weak solution of iodine or carbolic acid, either of which greatly lessens any bad odour.

Dr. West is, with Dr. Fuller,¹ an earnest advocate, in the treatment of heart disease, especially in childhood, by "long-continued absolute rest in the recumbent posture for many weeks, and then for many months more none but the gentlest movements; and for a year or more the being carried up and down stairs; and for several years more no violent exertion, no running, no dancing." The strict observance of these precautions he has known to be followed by the disappearance of the signs of valvular insufficiency, by the lessening of the area of dulness, and by the complete cessation of the morbid sound which had accompanied the heart's action. Although it is confessedly difficult to have such a regime conscientiously carried out, the result, which it gives hopes of attaining, certainly demands the exertion of an effort for its accomplishment.

We have thus briefly noticed some of the principal additions to this edition, and have made several short extracts from it which serve the double purpose of giving the reader the author's views of the various subjects, and a slight idea of the very frank and attractive way in which he presents them. The book is a mirror of the author's vast clinical experience, and a careful perusal of its pages shows that he has liberally shared with his readers the advantages of his quarter of a century of practice and careful observation. I. M. H.

ART. XXIX.—*Reports of American Hospitals for the Insane.*

BELIEVING that few of our readers will look to this Journal for the statistics of every hospital, and that the simple yearly records of uneventful usefulness—precious as they are to the friends of the afflicted and honourable to their caretakers—present little matter for comment or criticism, we shall not attempt formal notice of every Report sent us, but direct attention to those only in which we find accounts of important changes or discussions of interesting questions.

1. *Pennsylvania Hospital for the Insane*, for 1873.—This report contains a full description of a new building, just finished, for which the institution is indebted to the beneficence of the late Joseph Fisher. The present is the second edifice built out of his original bequest with accumulated interest. Together, these structures form a noble monument to the giver; and, bearing his name, may, we hope, inspire others to emulate his judicious liberality.

Increased accommodation for the insane is the subject of an earnest appeal by Dr. Kirkbride. Of the need there is no question; nor of the imperative duty which it creates. Even in the best of homes, insanity, as a general thing, cannot be successfully treated. In the houses of the poor, any approach to

¹ St. George's Hospital Reports, 1870, vol. v.; also No. of this Journal for Oct. 1871, p. 501.

proper care and treatment is impossible. Of the insane in almshouses and jails, we know but too well the hopeless miseries. Hospitals, especially designed for their purpose, and of sufficient capacity to shelter all, are the only proper resource. But until such accommodation is made, ample enough for the whole of this unfortunate class in the State, the hospitals are justified in giving preference to curable or recent cases. In connection with the existing deficiency of hospital capacity, Dr. Kirkbride sets forth with great force the claims of that large and worthy class who are far from rich but who have always been independent. People of this sort have an honourable horror of pauperizing their relatives. They cannot possibly afford to pay the lowest cost of maintenance in a private asylum. But they can pay, and are glad to pay, the small charges made in the State hospitals. Now, is it not monstrous to compel such persons, most of whom have paid taxes for the support of these institutions, to forego the curative, or even the custodial, privileges of a hospital, just to make room for those whose only superior claim is their pauperism? Are the occupants of jails and almshouses to be relieved to the exclusion of the independent poor? Surely we should do nothing to destroy the honest pride of the family that finds itself staggering under a burden grievous to be borne. Yet some among us would expel from our hospitals the insane whose friends pay a small amount for board, or compel them to become paupers.

Like all his brethren in the specialty, Dr. Kirkbride earnestly deprecates the placing of insane convicts in hospitals designed for the worthy and unfortunate. Even if a building detached from the main hospital were devoted to this class, the mere proximity and the association under one name would cruelly afflict and humiliate many innocent persons, and do much to perpetuate and intensify the too prevalent tendency to consider insanity a disgrace. Moreover, insane convicts, as a class, can be confined only by buildings, appliances, and discipline suited to crime and its punishment rather than to disease and its alleviation. Until the number of insane convicts warrants the erection of a special hospital, a building or ward in one of the penal institutions should be set apart for them.

The whole of this report may be profitably read by all who would know the right in regard to recent questions and discussions in Pennsylvania relating to the insane.

2. *Western Pennsylvania Hospital*, for 1873.—The report before us exhibits the results of two different hospitals, under one general name and government. One, for the treatment of medical and surgical cases, is situated in Pittsburg; the other, exclusively for mental diseases, is in a suburb called Dixmont. The managers and superintendent of the latter strongly protest against the admixture of insane convicts with their worthy and respectable inmates. They also successfully refute charges recently made of improper motives in the selection of patients to be admitted or retained.

3. *State Hospital for the Insane at Danville*, for 1873.—The present is the first report of this noble institution. Only the centre building and a portion of each wing are as yet completed. From the full description given, we judge that the arrangements and appliances are well adapted to their object, and that the materials and workmanship are good. Dr. Schultz makes some very just and instructive remarks upon the sources of error which vitiate the statements of friends as to the causes and the duration of insanity in the patients whom they bring to the hospital. The qualifications and the merits of the immediate attendants on the insane are also well described.

4. *Butler Hospital for the Insane*, Providence, Rhode Island, for 1873.—We are glad to learn that this institution, which, like the "Pennsylvania Hospital,"

is a corporate charity, has, like the latter, recently received a munificent gift for the erection of additional wings. Alexander Duncan, Esq., a trustee from the beginning, has added another to the long catalogue of his benefactions to this hospital, by giving it \$30,000 for building purposes. A condition is made that an equal sum shall be subscribed as an addition to the permanent funds. The trustees, desirous to keep step with the progress of the times, have adopted plans which when executed will afford provision for excited and violent patients, such as are equalled in few hospitals in the country, and surpassed by none. The new structure is to be called the "David Duncan Ward," to commemorate the name of a deceased son of the donor, who was himself a trustee, and a warm-hearted, generous friend of the hospital.

In this, as in most other American hospitals, many patients are received at a rate of board much less than the average cost. Even the lowest charges, however, are a heavy burden to some families. Dr. Sawyer suggests to the benevolent, the creation of a beneficiary fund, whereby persons may be assisted in the maintenance of insane relatives without that sense of degradation which attends the reception of State or town aid.

5. *Longview Asylum, Ohio, for 1873.*—In this State institution, as in nearly every one in the country, we meet the same complaint of overcrowding. The wards are so thronged as seriously to interfere with proper classification, to impede the curative work of the hospital and diminish the comfort of the patients. Obliging two or three patients to sleep in rooms designed for one, is every way most unsafe and objectionable.

Dr. Webb adverts to the evils of allowing the epileptic insane to be scattered about among other patients.

A brief but violent epidemic of cholera appeared in a detached ward occupied by negroes in July last. Nine deaths occurred.

6. *Eastern Lunatic Asylum of Virginia.*—This venerable institution celebrated its centennial in November, 1873. The report before us is principally occupied with accounts of the ceremonies of that occasion. This was the earliest hospital exclusively for the insane opened in America. In contrast to the somewhat boastful tone of some of the centennial orators, we are glad to read the manly words of Dr. Brower, telling the company that their hospital, though the oldest, is far from the best, and urging them to strive for a higher grade of excellence.

7. *Northern Hospital for the Insane, Oshkosh, Wisconsin, for 1873.*—This is the first report of a new hospital. In Wisconsin, as in other States, the increase of population and of mental disease has far exceeded that of hospital accommodation. The completed portion of the building is already badly crowded; and there are patients enough now waiting to fill the remaining wards as fast as they can be finished. Dr. Kempster asks the State to provide the hospital with proper apparatus for microscopic examinations, and for photographing the results. He believes that research of this kind is the most promising path towards a more thorough knowledge and a more successful treatment of mental disease. While we agree with Dr. K. in his views of the importance of microscopic observations in the study of mental disease, we would deprecate hasty conclusions.

8. *Willard Asylum for the Insane, Ovid, Western New York.* Reports for 1872 and 1873.—This large State establishment is designed to provide for the chronic insane, otherwise exposed to the neglect and abuses sure to afflict this class when confined in jails and poorhouses. It is both natural and proper that much regard should be given to cheapness in caring for this great and increasing

multitude. In noticing a report of the Illinois commissioners of public charities, (see No. of this Journal for April, 1872), we took occasion to deny and combat the pretensions there made in favour of small, detached buildings over the existing large, congregate hospitals under one roof. In recent additions for receiving 200 patients, the trustees of the Willard Asylum have adopted plans which, while they exhibit some of the gravest objections which we urged against the Cottage System, are yet so modified from its theoretic type, as scarcely even to pretend to any special excellence but cheapness. Upon this one merit, however, very much has been claimed; but, we believe, without just ground either in fact or theory. What then is the plan which is to provide accommodations "cheaper and more becoming," to "work a favourable revolution," and which "marks a new era"? A group of five buildings have been erected, twelve hundred feet from the central hospital. One is for administrative and general purposes, having dining-rooms (two) with kitchen and heating apparatus for the whole. The others, styled dormitories, two on each side, afford sleeping and living rooms, each for fifty male patients. Being but twelve feet apart, we fail to see here any better facilities for classification, or any greater freedom from mutual annoyance, than in the different wards of a great hospital. Nor can we perceive anything very "becoming" in the spectacle of nearly two hundred patients passing through sun, rain, snow, or sleet, thrice a day to their meals. In winter, are they to leave their warm rooms bare-headed, and lightly shod; or are hats and thick shoes to be donned three or six times every inclement day? If there be covered ways, the "detached cottages" become merely a clumsily arranged hospital for two hundred men, with medical supervision, and part of its work done at a distance of a quarter of a mile. Perhaps it is hardly fair to criticize the arrangements from other standpoints than that of cheapness; but when we find the magic words "detached cottage" used, we cannot forget that these are the shibboleth of certain would-be reformers who have claimed and promised for their pet plan very much more than economy. Hence we wish our readers to notice, in passing, that these Willard groups fulfil none of the especial good purposes elsewhere described as attainable in cottages. The windows have iron sashes and guards. The charming visions of family life are hardly realized in the assemblage of a hundred men in one dining-room; nor indeed even by fifty under one roof. The group, not each dormitory, is under the supervision, non-medical, of a "gentleman and his wife of mature years and discretion;" so that each individual's share of the humanizing influence of a kind and good woman, must be very small. No word in either report gives any support to the notion of some theorists, that a great deal more work could be got out of the inmates under the "cottage plan." In one brief paragraph it is intimated that greater content and greater liberty has prevailed in the detached than in the central edifices. But there is always a large number among the chronic insane, who can safely be allowed much liberty; and probably this class especially were placed in the new structures.

Let us now look at the one advantage which is emphatically and confidently proclaimed as attained in the Willard detached group. This is cheapness, both of original provision, and of continued maintenance. Now we maintain that this can be *possible* in detached buildings *only at the price of inferiority*. There is a cheapness which is dear in the end. Common sense and universal experience establish the fact, which is indeed an axiom, that fit and lasting buildings, with adequate and proper care and provision, can be furnished for a given number of insane more cheaply under one roof than under many. The very reports before us speak of economy as the reason why the baking and

laundry work for the entire Asylum is done at the central building, and why the four dormitories of the group have a common kitchen and heating apparatus. Why not then, instead of five edifices twelve hundred feet distant, have built a new wing, and thus saved altogether the multiplication of cooking and warming arrangements?

Nevertheless, we are told, that in point of fact the Willard group for two hundred patients has proved economical, both as to original outlay and as to maintenance. Figures are given which are supposed to prove this. Now figures may be variously handled, and, without impugning the motives of the officers, we think these, as presented, are calculated to mislead. As to first cost: the estimate is \$500, obtained by dividing the cost of the group by 200, no account being taken of the share which these 200 patients have in the laundry, bake-house, and other general administrative buildings previously erected. Yet they take the \$500 as the standard of comparison with the cost of large congregate hospitals built *de novo*. In fairness it should be compared only with the cost of new wings or wards to an established hospital. Thus judged, we find it considerably more expensive than additional accommodation in one or two hospitals which we happen to know about. Recent additions to the insane department of the Blockley almshouse, in Philadelphia, cost much less; and very admirable additions to the Government hospital at Washington, about the same as the Willard group. As no plans are given, and no very minute description of the kind of accommodation provided, we have little means of judging as to the real character and fitness of the provision made.

As to the cost of maintenance, we notice that the charge for board, first fixed at \$2 per week, in 1865, was raised to \$3, in 1872. The present actual cost per patient is estimated at \$3.09 weekly, with an additional annual expenditure of \$15 for clothing. We have no doubt that patients in most State hospitals cost considerably more than this. In the city asylum, at Blockley, however, the average expense has for the last three years ranged under \$1.80 per week, *including clothing*. We can readily conceive that the class of patients supported at the Willard Asylum may be supposed not to require many things which add largely to the expense of a curative hospital. As to the matter of fact, whether at this low charge the inmates are not only made comfortable but surrounded by influences conducive to restoration or improvement, we are provided with no data upon which to decide. Nothing is told us as to the diet, mode of life, or occupation of the patients, except that a certain number of garments are made, and an uncertain amount of work done in the laundry, and other farm and household departments. When credit is claimed for cheap maintenance, we think some particulars ought to be given by which the reader may judge concerning the means by which it is achieved. Certainly the annual cost of clothing does not indicate an adequate provision for patients required to go out of doors, and indeed none too much for any class.

The distance and isolation of the "group" render impossible that close and perpetual surveillance without which abuse will inevitably occur. We notice in each report, reference to attendants being discharged for ill treatment of their patients.

9. *State Lunatic Asylum, Utica, New York.*—The managers of this institution make complaint of what has become a serious interference with the discipline and usefulness of the asylum. This annoyance is the frequent summoning of the medical officers to appear as experts, before the courts. It is justly remarked that this is one of many reasons for some radical change in the methods of obtaining expert evidence.

The Utica Asylum has set an honourable example in the matter of necroscopical research. Pathological investigation, with the aid of the microscope and of photography, is made the sole duty of a competent physician.

We doubt the wisdom of including in a report intended for general readers, and the friends of patients, the history and post-mortem appearances of a score of fatal cases, as is here done. It strikes us that such details should be separately printed, and sent only to medical men and sister hospitals.

10. *State Lunatic Hospital*, Northampton, Mass.—From a perusal of this report we learn that in Massachusetts, as in Pennsylvania, the question of the disposition to be made of insane convicts has been recognized as one of great moment. The superintendents of existing State hospitals fully realize the impropriety of associating in any way the criminal insane with the innocent. Dr. Earle too, like several of his brethren in the specialty, deems it desirable to provide separate accommodation for epileptics.

B. L. R.

ART. XXX.—*The Nature of Gunshot Wounds of the Abdomen and their Treatment: based on a Review of the Case of the late James Fisk, Jr., in its Medico-Legal Aspects.* By EUGENE PEUGNET, M.D., etc. 8vo. pp. 96. New York: William Wood & Co., 1874.

THIS brochure is an elaborate study of the once famous Fisk-Stokes case. The principal points of interest hinged upon the position and relations of the parties. Had Fisk occupied a less prominent position, or been less notorious as a type of the worst phase of American city life, he would have died unnoticed, while his assailant, in all probability, would have paid the price of his private vengeance upon the scaffold. That the case did not take this course, but became the subject of three separate trials in which much public interest was manifested, is a matter of history too recent to need recapitulation.

Dr. Peugnet gives an accurate account of the gunshot wounds received by Fisk, as revealed upon post-mortem examination, and while he shows that there were fourteen wounds of the peritoneum, he holds that they would not necessarily have proved fatal, had not unwarrantably large doses of morphia been administered. In the opinion of this gentleman, the stomach was so paralyzed at first, that the doses given by that organ were simply retained there unabsorbed, until upon recovery from the shock, which he maintains did take place, the whole amount was absorbed at once with fatal effect. The question may be possessed of much physiological interest, yet we think that no practical surgeon would hesitate to resort to similar doses in such a case, where, judging by the average rules of surgery and not from a few isolated and extraordinary instances of recovery, the probability of a fatal issue was so strong. The annals of medicine record cases of marvellous recovery and escape from imminent death, but such results do not make the rules upon which to base a prognosis, and were we to accept them as such, we should find ourselves at fault in at least ninety-nine cases out of a hundred.

The medical jurisprudence of the case occupies much of the volume, and consists in large part of an analysis of the medical evidence given in the first and third trials. The position of the parties, as shown by the holes in the cloak, the direction of the wounds, with many of the attendant circumstances are gone over in detail. Dr. Peugnet shows much ingenuity in reviewing the

legal mistakes committed by the counsel, and their failures to detect the weak points made by the opposition, showing himself much of that subtilty of mind which would probably make him an invaluable coach upon a similar occasion. As a whole we have in this little volume a valuable and creditable study of this case from the stand-point of a medical counsel, rather than from the graver and more responsible position of a medical expert. Yet we cannot avoid saying that it seems to us to be a mistake for medical men to dilate upon the *legal* points of a case, as the lawyers engaged do not ordinarily require any such assistance.

Our author's conclusions are that "the medical jurisprudence of the Stokes case proves that: 1. The shooting of Fisk was not done in self-defence, but with premeditation; and 2. The wound in the abdomen was not necessarily fatal, and that the morphia was the immediate cause of death. These thus proved an attempt to commit murder in the first degree."

In view of this as well as some other late *causes célèbres* Dr. Peugnet thinks, and in this few will be found to differ from him, that there is an urgent demand for a change in the manner of conducting ante- and post-mortem inquests by coroners, and a modification in the introduction of expert testimony into criminal trials.

S. A.

ART. XXXI.—*A Universal Formulary: Containing the Methods of Preparing and Administering Official and other Medicines. The whole adapted to Physicians and Pharmacutists.* By R. EGLESFELD GRIFFITH, M.D. Third edition, carefully revised and much enlarged, by JOHN M. MAISCH, Phar.D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. With illustrations. 8vo. pp. 779. Philadelphia: Henry C. Lea, 1874.

THIS work has been so long popular with both physicians and apothecaries, in this country, for its extensive and useful collection of medicinal formulæ and pharmaceutical preparations, that it is merely necessary at this time to indicate the changes made in the present edition, which has undergone the careful revision of the able Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy.

All the numerous improvements in manipulations and processes which have been made since the publication of the previous edition, and all the new remedies of real merit are described by Prof. Maisch, and the work fully brought up to the present times. Such formulæ as have become obsolete are omitted, yet notwithstanding their omission, the volume has been enlarged by considerably more than one hundred pages.

It will thus be evident that the changes and additions of the present editor are most important, and must greatly increase the usefulness and popularity of the work.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Bartholow's Experiments on the Human Brain.*—Dr. FERRIER, in commenting upon Dr. Bartholow's experiments on the human brain (see No. of this Journal for April, 1874, page 305), states (*London Medical Record*, May 13, 1874) that, whatever opinion may be entertained as to their propriety, they furnish facts of great interest in relation to the physiology of the brain. The point at which the needles were inserted (the postero-parietal lobule) corresponds homologically with that region of the brain in monkeys which he, Dr. F., has shown to be a centre for the leg. In close relation to this in the ascending parietal convolution, and in the upper part of the ascending frontal in advance of the fissure of Rolando, are centres for movements of the arm and hand. The method followed by Dr. Bartholow, of pushing the needles into the brain-substance, favours diffusion of the current, so that the conjoint movements of the arm and hand may be looked upon as the simultaneous excitation of different individual centres. The results, however, are otherwise quite in accordance with what one would have reason to expect from irritation in this region. They distinctly bear out the anatomical and physiological homology of the brain of man with that of the monkey and lower animals. Owing to the depth of penetration of the needles, there is reason to believe that the stimulation reached the cerebral centres of the tactile nerves, which he has given grounds for supposing to be near this region. This would account for the tingling and painful sensations experienced in the extremities of the opposite side. Of further interest is the occurrence of epileptic convulsions from general diffusion of the irritation when the currents were intensified. This is entirely in accordance with his observations, and the phenomena of the seizure are a complete parallel to the results in the lower animal which he has elsewhere recorded. The subsequent spontaneous occurrence of epileptic convulsions and ultimate paralysis are clearly accounted for by the inflammatory changes, at first causing irritation and then proceeding to annihilation of the function of the cortical centres, without affection of the lower ganglia. Precisely the same effects are observable in the lower animals.

[We take pleasure, in justice to Prof. Bartholow, in giving place here to the following candid letter addressed by him to the Editor of the *British Medical Journal*, and which is published in the No. of that excellent periodical for May 30th, and which, as the editor remarks, "is, we believe, one which is likely to disarm further criticism."]

"SIR: A case of epithelioma exposing the brain on which I ventured to make some experiments, has excited unfavourable comment in your widely circulated Journal and elsewhere. Under these circumstances, I beg to offer

some explanations, which, whilst they do not justify the experiments in question, at least, it appears to me, put the matter in a less offensive shape.

"1. The patient was hopelessly diseased, with a rodent ulcer, which had already invaded the dura mater. The ulcer was rapidly extending, and threatened an early extinction of life.

"2. The patient consented to have the experiments made.

"3. It was believed that fine insulated needles could be introduced without injury that would affect the progress and termination of the case, for the following reasons. The brain has been incised to permit the escape of pus, a notable and successful example of which has recently occurred in London. Portions of the brain-substance have been lost, and yet the patient survived; for example, the Massachusetts case, in which a tamping-iron was driven through the brain, the patient recovering, and dying many years afterwards of another malady.

"4. The faradic current was used; and this has, as is well known, no electrolytic action.

"5. The fatal result was attributable to the progress of the epithelioma. The erosion of the skull already had existed thirteen months. The thrombus found *post-mortem* in the longitudinal sinus could not have been caused by the needles, which were introduced some distance from it on each side.

"Notwithstanding my sanguine expectations, based on the facts above stated, that small insulated needle electrodes could be introduced without injury into the cerebral substance, I now know that I was mistaken. To repeat such experiments with the knowledge we now have that injury will be done by them—although they did not cause the fatal result in my own case—would be in the highest degree criminal. I can only now express my regret that facts which I hoped would further, in some slight degree, the progress of knowledge, were obtained at the expense of some injury to the patient."

2. *Further Researches on the Localization of Function in the Brain.*—In a paper read before the Royal Society on March 5, Dr. FERRIER gave the results of an experimental investigation, tending to prove that there is a localization of function in special regions of the cerebral hemispheres.

In a former paper published by the author in the *West Riding Lunatic Asylum Medical Reports*, vol. iii. 1873, the results were given of experiments on rabbits, cats, and dogs, made specially for the purpose of testing the theory of Dr. Hughlings Jackson, that localized and unilateral epilepsies are caused by irritation or "discharging lesions" of the gray matter of the hemispheres in the region of the corpus striatum. Besides confirming Hughlings Jackson's views, the author's researches indicated an exact localization in the hemispheres or centres of regions for the carrying out of simple and complex muscular movements of a definite character, and described by him as of a purposive or expressional nature.

Facts were also recorded tending to show that other regions of the brain were connected with sensory perception, but no localization was definitely arrived at.

Among the experiments now related are some in further confirmation and extension of those already made on cats, dogs, and rabbits, as well as a new series of experiments on other vertebrates. In particular, numerous experiments on monkeys are described, for the purpose of which the author received a grant of money from the Council of the Royal Society. In addition, the results of experiments on jackals, guinea-pigs, rats, pigeons, frogs, toads, and fishes are narrated.

The method of investigation consists in the application of the stimulus of an induced current of electricity directly to the surface of the brain in animals rendered only partially insensible during the process of exploration—complete anaesthesia annihilating all reaction. It is supplemented by the method of localized destructive lesions of the hemispheres.

Special attention is called to the precision with which a given result follows stimulation of a definite area; so much so, that, when once the brain has been accurately mapped out, the experimenter can predict with certainty the

result of stimulation of a given region or centre. The theory that the phenomena are due not to excitation of cortical centres, but to conduction of the electric currents to basal ganglia and motor tracts, is considered as disposed of by the fact of the precision and predictable characters of the results, and by the marked differences in the phenomena which are observed when regions in close local relation to each other are excited. Other facts are pointed out, bearing in the same direction; among others, the harmony and homology subsisting between the results of experiment in all the different animals.

The experiments on monkeys are first described.

Reference is made in the description to the figures of the brain, on which are delineated the position and extent of the regions, stimulation of which is followed by constant and definite results.

Generally it may be stated that the centres for the movements of the limbs are situated in the convolutions bounding the fissure of Rolando, viz., the ascending parietal convolution with its postero-parietal termination as far back as the parieto-occipital fissure, the ascending frontal, and posterior termination of the superior frontal convolution. Centres for individual movements of the limbs, hands, and feet are differentiated in these convolutions.

Further, in the ascending frontal convolution, on a level with the posterior termination of the middle frontal, are centres for certain facial muscles, *e. g.*, the zygomatic, etc. At the posterior termination of the inferior frontal convolution and corresponding part of the ascending frontal are the centres for various movements of the mouth and tongue. This is the homologue of "Broca's convolution." At the inferior angle of the intraparietal sulcus is the centre for the platysma.

In the superior frontal convolution, in advance of the centre for certain forward movements of the arm, as well as in the corresponding part of the middle frontal convolution, are areas, stimulation of which causes lateral (cross) movements of the head and eyes, and dilatation of the pupils.

The antero-frontal region, with the inferior frontal and orbital convolution, give no definite results on irritation. Extirpation of these parts causes a condition resembling dementia.

No results could be ascertained as regards the function of the central lobe or Island of Reil.

Irritation of the angular gyrus (*pli courbe*) causes certain movements of the eyeballs and pupils. Destruction of this convolution gives data for regarding it as the cerebral expansion of the optic nerve, and as such, the seat of visual perception.

The phenomena resulting from irritation of the superior temporo-sphenoidal convolution (pricking of the ear, etc.) are indications of excitation of ideas of sound. It is regarded as the cerebral termination of the auditory nerve. The sense of smell is localized in the uncinate convolution. The situation of the regions connected with sensations of taste and touch is not accurately defined, but some facts are given indicating their probable locality.

The occipital lobes do not react on stimulation. Destruction of these lobes caused no loss of sensation or voluntary motion, but an apparent abolition of the instincts of self-preservation.

The corpora striata are shown to be motor in function, and the optic thalami sensory.

Stimulation of the corpora quadrigemina causes dilatation of the pupils, opisthotonic contractions; and the utterance of peculiar cries when the *testes* alone are irritated. The nature and signification of these phenomena are regarded as still obscure, and requiring further investigation.

Some experiments have been made on the cerebellum of monkeys. They confirm the author's previous views as to the relation of this organ to co-ordination of the optic axes, and the maintenance of bodily equilibrium. The experiments are not detailed, as they will form the subject of a future paper.

New experiments on dogs essentially confirm those already published, while many new facts have been elicited. Those on jackals agree in the main with

the experiments on dogs, both as to the character of the results and the localization of the centres. New experiments on cats generally confirm, as well as further define, the results described by the author in his former paper. The facts of experiments on rabbits, guinea-pigs, and rats are essentially alike, and also confirm former statements.

In all those animals, the sensory regions are defined, and their position compared with those in the brain of the monkey.

The only result obtained by the stimulation of the cerebral hemispheres in pigeons was contraction of the pupil. The region associated with this action, situated in the postero-parietal aspect, is compared with a similar region in the mammalian brain, and regarded as the seat of visual perception.

Movements of the limbs in frogs, and of the tail and fins in fishes (as in swimming), can be excited from the cerebral hemispheres in these animals. Exact localization of motor and sensory centres is not possible.

The optic lobes in birds, frogs, and fishes seem related to movements of flight and progression, in addition to their relation with the eyes. Similar phenomena result from irritation of the cerebellum, but the signification of these is reserved for future inquiry.

From the data of physiological experiment, a foundation is obtained for constructing an anatomical homology of the convolutions.

Among other points in homology the fissure of Rolando is shown to be the homologue of the crucial sulcus in the brain of the carnivora.

The whole brain is considered as divided into a sensory and motor region, corresponding to their anatomical relation to the optic thalami and corpora striata, and the sensory and motor tracts.

The motor regions are regarded as essential for the execution of voluntary movements, and as the seat of a corresponding motor memory (motor ideas), the sensory region being looked upon as the organic seat of ideas derived from sensory impressions. An explanation is attempted of the phenomena of aphasia, and the relation of the memory of words to the ideas they represent.

The theory that a certain action, excited by stimulation of a certain centre, is the result of a mental conception, is considered and disputed. From the complexity of mental phenomena, and the participation in them of both motor and sensory substrata, any system of localization of mental faculties which does not take both factors into account, must be radically false. A scientific phrenology is regarded as possible.

The paper concludes with a short consideration of the relation of the basal ganglia to the hemispheres. The view is adopted that they constitute a sub-voluntary or automatic sensori-motor mechanism.—*London Medical Record*, March 18, 1874.

3. *Neuropathic Origin of Simple Hydruria (Diabetes Insipidus) from Epidemic Cerebro-spinal Meningitis, Trauma, and Syphilis.*—Professor MOSLER states that from physiological experiments it seems likely that different parts of the medulla oblongata are concerned in the production of excess of urine on the one hand, and the sugar in the urine which is the characteristic phenomenon of diabetes mellitus on the other. At least, experiment has shown that both conditions may arise from affections of the nervous centres. In the present paper the author gives some cases in which the occurrence of polyuria or diabetes insipidus is ascribed to affections of the brain. The first case was one in which after an attack of epidemic cerebro-spinal meningitis there remained increase of the quantity of urine passed. In this case the local disease had probably produced some structural change in the fourth ventricle or its neighbourhood. The second case is one in which a similar symptom resulted from a fall on the head. In this case the polyuria was probably due to hemorrhage into the fourth ventricle with rupture of the brain substance, the healing of which would leave a cicatrix. The symptom lasted 14 years, and was much benefited by large doses of acetate of lead combined with opium. The author has found acetate of lead a very efficient means of causing contraction of the vessels of the kidney, and he gives it with great advantage in catarrhal pyelitis. The third case is one of syphilis, in which polyuria was the first symptom of

syphilitic disease of the brain. There followed various other cerebral symptoms, such as epileptiform convulsions, and after death there was extensive softening in the left hemisphere, in the medulla oblongata and the pons.—*Glasgow Med. Journ.*, Jan. 1874, from *Virchow's Archiv*, July, 1873.

4. *Changes in the Muscular Tissue, after Division of Nerves.*—Professor BIZZOZERO and C. GOLGI were engaged in experiments having a different object when they lighted on the curious observation given in this paper. In some cases where the nerve supplying a muscle had been cut, they found that the muscular fibre had nearly or completely disappeared, while the muscle, as a whole, was even increased in size. The proper muscular tissue had been replaced by fatty tissue. This observation may be of some consequence in relation to paralysis pseudo-hypertrophica.—*Glasgow Med. Journ.*, Jan. 1874, from *Stricker's Med. Jahrbücher*, part 1, 1873.

5. *On Diapedesis.*—Prof. J. ARNOLD, of Heidelberg, gives the results of a large number of experiments made on the frog's tongue, with the view to determining the mode of escape of blood-corpuscles from the vessels after obstruction of veins. He ligatured either the central or lateral veins of the tongue, and then submitted the capillaries which feed these to microscopic examination. There was, doubtless as a result of the obstruction of the vein, greatly increased pressure within the capillaries, and this seemed to manifest itself in the form of numerous minute bulgings or pouches out from the vessels. Further, he saw how the red, and (more rarely) the white blood corpuscles were made to slip through the vessels, this process of diapedesis being apparently a passive one, and due to the increased pressure in great measure. Thus he observed, how when a red blood corpuscle had got through the wall there was generally a current of fluid from the vessel through the same aperture, till it got filled again by a fresh corpuscle. But that diapedesis is passive seemed also to be shown by the fact that when finally divided vermilion was previously introduced into the circulation, it also escaped through the same channels as the red blood corpuscles. Again on injecting the vessels after death, in cases which had already been the subject of observation, with a blue coloured solution of gelatine, he found that it also escaped from the capillaries, and that often by a channel in which a blood corpuscle was sticking. Then further, when the capillaries were stained in the usual way with a silver solution, there were found to be numerous dark points and circles visible in the internal surface which were always at the borders of the endothelial plates. The circles at least were apertures through which blood corpuscles had escaped. The question arises, however, whether any openings exist in the capillaries normally, and these are only enlarged when the pressure is increased—or whether they are entirely produced by the increased pressure. The author, from his observations, concludes that there are normally in the capillaries minute apertures between the endothelium cells which he names *stigmata*, and that under the conditions presented they enlarge and give passage to the blood corpuscles; these enlarged *stigmata* he would name *stomata*. The second part of the paper before us is taken up with the fate of the corpuscles which have been pushed out of the vessels. As will be noticed, the escape of these corpuscles is a purely passive process, not a wandering out, and after they have left the vessels they may be carried away from them to a distance by the currents which rush through the *stomata* when a corpuscle leaves one for a moment empty. In their subsequent course the corpuscles are still passive. The author describes somewhat minutely how, either isolated or in groups, they gradually lose their colouring matter, and finally disintegrate. During the process of decolourization the groups of red blood corpuscles often look delusively like large colourless cells with red blood corpuscles inside it, but this the author says is not the case, and he believes the corpuscle-holding cells of some authors to be really groups of red blood corpuscles undergoing these changes. The corpuscles sometimes, though rarely, form solid pigment, either in granules or in needles. Lastly, the author has not been able to discover any other mode of disappearance of the exuded blood corpuscles than that above described. They may, however, in

part, be carried into the lymphatics, for anything he knows.—*Glasgow Med. Journ.*, Jan. 1874, from *Virchow's Archiv*, Aug. 1873.

6. *Origin of the Bile-ducts.*—At the late meeting of the German Association at Wiesbaden, Professor KUPFFER, of Kiel, described certain new points in the histology of the mammalian liver, which should prove as interesting as they are new to most anatomists. By the injection of the bile-ducts and bile-capillaries, small cavities or vacuoles may sometimes be filled within the liver-cells, which are connected with the bile-capillaries around the corresponding cells by means of excessively delicate canals. The appearance presented by a good specimen of injected liver is that of a number of small stalked buttons attached to the bile-capillaries, the stalks being, as a rule, somewhat bent. Hering, who has advanced the knowledge of the hepatic structure so considerably, has not failed to see these knobs, but believes them to be accidental extravasations within the substance of the cell. The regularity of the appearance, however, and the presence of the delicate canal of communication, support the view advanced by Kupffer. This anatomist recognizes in the intra-cellular spaces secreting vacuoles or capsules, from which the bile flows into the capillaries. The liver-cells which are furnished with such vacuoles would therefore closely resemble the capsule-cells discovered and described by Kupffer in the salivary glands of some insects.—*Med. Times and Gaz.*, Feb. 14, 1874.

7. *Contributions on the Structure and Functions of the Bladder.*—According to Dr. G. JURIK, the arrangement of the muscular layers of the bladder and their relation to the internal sphincter urethræ are as follows: The external layer is the strongest, and it passes longitudinally from above downwards, being especially developed on the anterior and posterior surfaces. The middle layer is transverse but slightly oblique, the posterior bundles passing downwards and forwards and the anterior downwards and backwards, so that they cross somewhat. The internal layer is longitudinal but not very powerful. It is most developed at the upper end of the bladder, disappearing altogether at the level of the entrance of the ureters. The powerful external longitudinal layer is in part inserted at its lower extremity into the internal sphincter, so that when it comes into action it will draw asunder the sphincter and open the orifice. This sphincter is thus relaxed, not by the pressure of the fluid but by the direct action of the longitudinal muscular layer. A further point is that the entrance of the ureters was shown to be valved not only by the oblique passage through the mucous membrane, but also by the passage through the muscular coat. When the mucous membrane was cut away, and pressure exercised on fluid in the bladder, there was no escape through the ureters. It would thus seem that the contraction of the muscular coat of the bladder has a direct influence in closing the ureters and preventing regurgitation during the emptying of the bladder.—*Glasgow Med. Journ.*, April, 1874, from *Stricker's Medizinische Jahrbücher*, Part IV., 1873.

8. *Bladder with a Pouch communicating with a Third Ureter.*—Mr. FLETCHER BEACH showed to the Pathological Society of London a case of this nature, occurring in a child aged 5 years. She had been healthy till six weeks previously, when there was a difficulty in micturition, which increased, and death ensued. *Post mortem*, a third ureter, opening below with a pouch near the bladder, filled with pus, was discovered.—*Brit. Med. Journ.*, May 16, 1874.

9. *Ovulation without Menstruation.*—M. DE SINÉTY stated at the Biological Society of Paris (25 April, 1874) that he had observed on the surface of the ovary of a woman who had died of phthisis, and who had not menstruated for five months, a ruptured Graafian vesicle. Ovulation had thus continued in the absence of menstruation.—*Revue Scientifique*, May 2, 1874.

MATERIA MEDICA, GENERAL THERAPEUTICS,
AND PHARMACY.

10. *Jaborandi, a new Sudorific and Sialogogue.*—Recent French journals (*Revue Scientifique*, April 18, *L'Union Médicale*, April 14 and May 9, and *Gaz. Hebdom.*, April 10) contain notices of a new and powerful sudorific and sialogogue brought to Paris by Dr. S. COUTINHO, of Pernambuco. This new therapeutic agent is the leaves of a shrub growing in Brazil, the botanical characters of which have not yet been satisfactorily established. M. RABUTEAU, who has made a chemical analysis of these leaves, and experimented upon their physiological properties, failed to attain any evidence of an alkaloid in these leaves, or the presence of any organic base. The quantity of leaves furnished Mr. R. was so small that he could not carry his investigations as far as he desired, and awaits a further supply to enable him to continue them. All of the leaves which remained weighed 2.90 grammes, and these Mr. R. reduced to powder, and about 10 o'clock in the evening of the 6th April, he prepared a teacupful of an infusion of them, which he took when nearly cold; one-half of it alone, the other half with the addition of a little sugar; this addition was not, however, necessary, as the taste of the infusion was not disagreeable. Ten or fifteen minutes after he had taken the medicine, Mr. R.'s forehead became moist, and he went to bed. Sweating speedily came on, and at the same time profuse salivation, which continued for nearly two hours. There was scarcely any abnormal heat, nevertheless the temperature was highest when the effects of the medicine were most active—three-quarters of an hour after taking the infusion. After changing his wet shirt, Mr. R. slept well.

Mr. R.'s latest experiments show that the bitter substance of the jaborandi is the active sialogogue and sudorific principle; and that the sialogogue effects are most readily manifested, since they are most marked when the active principle has been taken in a very small dose; and, finally, that when the dose is larger, the sudorific effects are increased.

M. GUBLER has also tried this drug at the Hôpital Beaujon, and reports that it has always acted as a powerful diaphoretic and sialogogue. Its action becomes evident a few minutes after it has been taken, and almost with certainty. Very soon after it is administered, the sweat rolls down the face and the whole surface of the body. The saliva flows in such abundance that articulation becomes almost an impossibility; as much as a pint and a half has been collected in less than two hours. At the same time the bronchial secretion has been observed to increase, and in one or two cases diarrhœa supervened. It is a remarkable fact, that the employment of heat, as M. Coutinho has remarked, has but a slight influence in the production of the sudorific effects of jaborandi. Whilst it is of paramount importance where our indigenous sudorifics are concerned, it is certainly not unavailing to administer jaborandi in a very hot infusion, and to cover the patient up warmly in bed; but these conditions are by no means necessary to develop the power of the new sudorific. Thus in one experiment, a person, who is by no means subject to sweatings, produced a copious perspiration in himself, by taking a glass of jaborandi scarcely warm, while he was going about his ordinary business. M. Gubler believes that a great future is in store for this new remedy, which he considers to be the first incontestable specimen of a diaphoretic truly worthy of the name, that is to say, of a medicament having the power of directly inducing the secretion of sweat by an elective action—by a special stimulation of the sudoriparous apparatus. The form of administration is from four to six grammes of the leaves in a cup of warm water, or if given in cold water the same results ensue.

11. *On Eucalyptus and its Febrifuge Qualities.*—Dr. E. BURDEL, Physician to the hospital at Virgion, records in the *Revue des Sciences Médicales*, April, 1874, the results of his observations on the action of eucalyptus in the Sologne.

In the note under consideration, upwards of thirty-three cases are reported, in which eucalyptus was successful in eighteen instances. M. Burdel believes

that he can now, after two years' experience, by bringing together the facts which have occurred under his observation, arrive at the following conclusions with regard to the employment of eucalyptus.

The action of this remedy, which may certainly be considered a febrifuge, is slow and far from being always constant. In mild intermittent fever, eucalyptus is successful in four-fifths of the cases; in tertian, in three-fifths only; and, finally, in quartan fevers, it almost entirely fails: that is to say, in eight-tenths of the cases. In the seasons when intermittent fever is most frequent—that is to say, endemic—relapses are much more common when eucalyptus is used than when recourse is had to quinia. Relapses may, however, be avoided by administering eucalyptus more frequently after some days' rest only, and in as large doses as the stomach will tolerate. This remedy is perfectly inert in palustral cachexia. Finally, M. Burdel believes that in the second year of his experiments he obtained a rather larger proportion of cures and a smaller number of relapses, because he gave the eucalyptus in conjunction with good wines, iron, and quinia, and kept the organism up to its work by frequently repeated doses. Dr. Burdel administered the alcoholic extract of eucalyptus in pills, each containing 15 centigrammes, to the number of from four to ten daily, according to the form of the fever, given twice during the day.—*London Med. Record*, May 13, 1874.

12. *Action of Chloroform*.—Dr. POLLAK gives the following as his conclusions on this subject:—

1. Chloral is a very good hypnotic, and in all those diseases which consist in abnormal cerebral excitement, or are combined with this, it by its soporific influence constitutes a good calming medicine. 2. It relieves pain by the fact of inducing sleep, but will not relieve pain without causing sleep. In very intense pain it exerts but little hypnotic effect, and in such cases is advantageously combined with morphia. 3. As it induces relaxation of muscles, both voluntary and involuntary, it is an excellent means in the various forms of spasm. 4. In disease of the heart and lungs and of the digestive canal, chloral is without effect or unsuitable or even dangerous, and consequently is contraindicated, or should only be employed with caution. 5. It does not admit of being used as an anæsthetic during the execution of the great operations. 6. Its prolonged employment is not usually attended with any disagreeable effects, and if any occur, they are not of any consequence. It especially does not induce congestion of the brain or disturbance of the digestive and nutritive processes. 7. It is in most of the diseases in which it is employed an excellent palliative, but on the disease itself it usually exerts no influence. Chloral is especially indicated in the cases in which morphia is indicated, and when the latter on account of some of its effects cannot be administered. It is contraindicated in diseases of the heart and lungs and of the digestive canal. 8. Comparing chloral with morphia and chloroform, we may assert (1) that as a soporific agent its operation is more certain and less disagreeable than is that of morphia, which it will succeed in displacing as a hypnotic; (2) that it only relieves pain by inducing sleep, and fails to remove intense pain, so that as an anodyne it cannot supersede morphia; (3) and that as an anæsthetic it is far inferior to chloroform both in rapidity and intensity. 9. Although chloral has rightly obtained admission into the *Materia Medica*, it has not yet acquired its definitive place. Notwithstanding the numerous communications that have been made respecting it (the author is cognizant of the writings of 312 authors upon the subject), much more has yet to be worked out respecting its chemical, physiological, and therapeutical relationships before the "chloral question" can be said to be completely settled.—*Med. Times and Gazette*, April 11, from *Wiener Med. Woch.*, Feb. 28, 1874.

13. *Studies on Ether and Chloroform*.—Dr. T. G. HAKE gives (*The Practitioner* April, 1874) an interesting account of the observations made by Prof. SCHIFF, of Florence, on the action of ether and chloroform. These observations, though instituted solely for the advancement of physiological science, have a direct practical bearing on surgical practice. Prof. S. states in his

work (*Sopra il metodo seguito negli esperimenti sugli animali viventi*): "We adopt ether and not chloroform because a very extensive experience has shown that etherization pushed to the very last stage of insensibility is never dangerous to life so long as one maintains the act of respiration. And even if one presses the inhalation of ether yet further, so that the respiratory movements cease, or, in other words, the appearance of death is complete, life is never menaced, if only at the moment of the paralysis of the thoracic walls inhalation is interrupted and a species of artificial respiration is immediately commenced by means of periodic compression of the thoracic parietes themselves.

"Chloroform has been preferred to ether because it acts more quickly, and its use is more agreeable to the patient, who dislikes the odour of ether. But chloroform has a paralyzing action much greater than that of ether, and in like manner, at least in man and the mammalia generally, has a special influence on the nerves of the heart and of the vessels. If chloroform is pushed so as to produce a considerable weakening of the respiratory movements, the interruption of the inhalation may, in a majority of cases, lead to the re-establishment of respiration and afterwards of sensation; but sometimes, a short time after the commencement of inhalation, the force of the circulation is so enfeebled that it no longer renews, fast enough, the blood in the lungs. The blood of the body no longer comes into necessary contact with the atmospheric air introduced by respiration into the lungs.

"Death is sometimes sudden, but it may be preceded more or less by signs of sinking of the pressure of the blood in the vessels. The cases in which paralysis of the circulation shows itself while respiration continues are comparatively rare, but the annals of human surgery record many examples, and we have ourselves observed some in animals. If the action of chloroform is prolonged until respiration ceases, we are not even sure of being able to revive the individual after having re-established the respiratory movements, for these often again cease owing to the disturbance of the circulation, while these same movements, if restored after the inhalation of ether, become *always* more frequent in the individual when left to himself.

"We are able to say that in the present state of science the medical man is responsible for every case of death occasioned by the application of ether, because a careful watching of the respiration is capable of preventing death, whilst the lethal effect of chloroform depends in part on individual predisposition which the physician is unable to recognize."

Dr. Hake states that "To explain this latter statement, it should be understood that both ether and chloroform, pushed to the last stage of their action, give rise to paralysis of the respiration, vessels, heart and motor nerves, but that ether invariably produces its effects in the order of sequence now given (life of course being sustained in all cases by artificial respiration when automatic breathing has ceased); while chloroform sometimes produces paralysis of the vessels in the first instance, then of respiration, and finally of the heart. The result of the action of chloroform is thus variable; it frequently happens that its effects manifest themselves in the same order of sequence as those of ether, only much more rapidly; and it also happens that they follow each other in an inverse order as respects the first two phenomena, paralysis of the respiration and of the vessels. It is this variable action of chloroform which the physician is unable to foresee and to provide against in individual cases, and to which the danger to life is traceable. Very often at the beginning of the inhalation of chloroform by the trachea the vessels become at once paralyzed, the pulse is insensible, and death follows rapidly with a deep inspiration. All this Professor Schiff has frequently verified by experiments on dogs and rabbits, in which during inhalation the manometer has been constantly in connection with the carotid artery.

"That the heart is the last of these three factors of life which dies, the Professor clearly demonstrates in the following way. When by the action of the chloroform the pressure has gone down nearly to zero, and there is no pulsation visible, compression of the thoracic aorta between the crura of the diaphragm, or the mere compression of the abdomen, restores to the pulse its strength and frequency, and causes the pressure in the manometer to rise to a considerable

height, very often to 100 or 120 millimetres. This fact proves that the heart, notwithstanding its apparent paralysis, is still able to maintain the almost normal pressure of the blood, and to contract with more strength than before when the pressure is acting upon its walls and opposing itself to their contraction. The apparent paralysis must depend on this cause; the vaso-motor nerves are paralyzed, inasmuch as all the vessels of the body are dilated; their increased capacity retains the blood, now no longer returned to the heart, which becomes bloodless in a secondary manner. Compression of the abdomen, or ligatures to the upper and lower extremities, produces a compensation for the increased capacity of the bloodvessels, and in this way the circulation becomes more normal, while before it had suffered, not through paralysis of the heart, but from paralytic dilatation of the peripheral vessels."

As regards the comparative value of ether and chloroform, Professor Schiff continues: "Our own experiments bearing on this argument enable us to say that in more than three thousand cases we have adopted etherization with a view to preserve the life of animals, and that with the few exceptions indicated elsewhere (Memoir on the Laryngeal Nerve), not a single case of death occurred. On the other hand, chloroform has cost us a considerable number of animals when I have wished to push anæsthesia to its ultimate stage.

"Our experiments confirm more and more that in etherization the pressure of the vessels maintains itself to a height almost normal and always compatible with the continuance of life even after the cessation of automatic and the substitution of artificial respiration, so that the mere continuance of breathing gives us a safe warranty of the vitality of the individual. Often in experiments made with this view, we have seen that at the moment of the cessation of automatic breathing the circulation was still in so normal a state that the commencement of asphyxia indicated still the *asphyxic height* of vascular pressure as measured by the manometer; that is, instead of falling before death, the pressure rose through the accumulation of carbonic acid, which, as is known, is an irritant of the vascular system and of its nerves.

"When, after the cessation of breathing, one at once applies artificial respiration with air that is passed over a stratum of ether, so that etherization is still kept up, one is able, by regulating the quantity of ether that is mixed with the air, to continue for hours the etherization of the animal, which no longer breathes spontaneously, without the pressure of the blood being notably diminished, and without danger to the life of the animal, which one can always resuscitate by introducing pure air into the lungs.

"It is true, however, that the pressure of the blood always diminishes slightly, so that after two hours it may have fallen, for example, from 120 to 80 millimetres; but such a fall is not prejudicial to life. One is able in these experiments to regulate with facility the quantity of ether, commencing with a low temperature of the vessel that contains it. If one finds that the animal shows a ready tendency to recommence certain automatic respiratory movements, Wolf's bottle, which contains the ether, and is connected with the bellows and manometer by means of India-rubber tubes, is brought rather nearer to the body of the animal so as to increase the heating effect.

"It is otherwise with chloroform. In animals in which, under the influence of this agent, the pressure of the blood has been examined with the manometer, one finds that the pressure is already considerably lowered before automatic respiration has ceased; and we have frequently seen the pulse disappear almost entirely in the manometer, whilst the pressure fell to 25 or 30 millimetres, and the dog still breathed spontaneously.

"In dogs in which one employs artificial respiration from the commencement, causing the air to pass through a bottle containing chloroform, so that in entering the lungs it is but feebly loaded with this agent, we have seen the pressure, sometimes immediately, sometimes after a longer period, lower itself almost to zero, while the extremely weak pulse which the manometer recorded has also ceased soon afterwards, the respiration being continued as at the beginning of the experiment. It is therefore certain that in these cases it was not the cessation of the respiration, nor its weakening, that killed the animal. This becomes yet more evident through the experiments in which, after the cessation

of vascular pressure, when the pressure was that of blood almost at rest, one suddenly replaced the respiration of chloroformized air by normal air without being able to save the animal.

"After a few forced inspirations one sometimes sees the automatic breathing of the animal recommence. This may be up to two, four, and, as in one case, ten automatic inspirations; but the pressure of the blood does not rise, and the dog dies through cessation of circulation.

"Fortunately things do not always go thus. It is possible to find that a very limited quantity of chloroform mixed with the air may maintain a state of apparent death without any automatic respiration, and with an extreme fall of arterial pressure that yet admits, after half an hour's continuance of chloroformization, of the re-establishment of life on pure air being introduced. But the keeping the animal alive in such an experiment is always uncertain: we cannot make sure, as with ether, that the animal will be revived. We are never able to say, and this is a great point, what the limit of chloroform is in the inspired air, which affords us a certainty of the animal being restored."

Prof. Schiff considers that chloroform should be banished from practice as an anæsthetic agent, except in cases in which extraordinary resistance to the effect of ether shows itself, in which instances it might be allowed to mix a little chloroform with it in order to produce the commencement of anæsthesia, which should afterwards be continued with pure ether.

Prof. S. warns surgeons not to continue on operation immediately on a patient's recovery from the excessive action of anæsthetics, but to wait until respiration has been energetically restored, otherwise a new and generally fatal asphyxia may be produced.

14. *Physiological Action of Coca.*—Dr. ALEX. BENNETT states (*Brit. Med. Journ.*, April 18, 1874) that with the aid of Messrs. Macfarlane & Co., chemists, he succeeded in obtaining a small quantity of the crystalline substance cocaine ($C_{16}H_{19}NO_4$). With this he conducted a series of experiments and observations on the lower animals, from which he ascertained that cocaine is a powerful poison with special action on the nervous system. He has also experimented with theine, caffeine, guaranine, and theobromine, with a view of determining the actions of each.

The following are his conclusions:—

1. The physiological actions of coca, tea, coffee, guarana, and cocoa, are mainly, if not entirely, due to their neutral principles.

2. Cocaine, theine, caffeine, guaranine, and theobromine are powerful poisons, inducing a series of symptoms affecting the nervous, respiratory, circulatory, vaso-motor, and glandular systems, which terminate, if the dose be large enough, in death.

3. These five principles are, to all appearances, identical in physiological action.

4. In small doses not ending fatally, these five substances produce—*a.* Cerebral excitement not succeeded by coma, and *b.* Partial loss of sensibility.

5. In large doses they produce—*a.* Cerebral excitement, *b.* Complete paralysis of sensibility, *c.* Tetanic spasms and convulsions, and *d.* Death.

6. They paralyze the entire posterior column of the spinal cord, also the entire system of peripheral sensory nerves; but the anterior columns of the cord and the peripheral motor nerves are not paralyzed.

7. They frequently produce convulsions of a clonic character, but occasionally they cause tetanic spasms, which latter are sometimes so severe as to induce opisthotonos.

8. They do not produce muscular paralysis.

9. They at first increase, then impede, and lastly stop, the respirations.

10. They at first increase, and finally diminish, both the force and frequency of the heart's contractions.

11. They produce at first contraction, and afterwards dilatation, of the capillaries and small bloodvessels, with stasis of the blood, indicating first irritation, and subsequent paralysis, of the vaso-motor nerves.

12. They affect the temperature by first slightly lowering, and secondly increasing it.

13. They usually produce contraction of the pupil.

14. They produce an increase of the salivary secretion.

15. They induce a peculiar form of tenesmus, accompanied by a copious discharge of clear mucus from the bowels.

These conclusions have been arrived at after a careful series of experiments conducted on more than one hundred animals of different kinds; and it is extremely interesting to learn that those agents, which the different nations of the world have found by experience to produce refreshing and stimulating beverages, although unlike one another and procured from totally different sources, possess in common proximate principles, which not only are almost identical in chemical composition, but also appear similar in physiological action.

According to the above observations, cocaine has the same action as theine, etc.; so, for clinical purposes, the latter is at present preferable on account of the enormous expense of the former. That the effects of the beverages themselves are mainly, if not entirely, due to the neutral principles they contain, is highly probable; but of their beneficial action in medical practice I am not yet in a position to give an opinion. However, from their stimulant action and effect on the nervous system generally, there is every reason to hope that the concentrated forms of these drugs, or the neutral principles themselves, will prove powerful and useful agents in the hands of the physician for the treatment of disease.

Before the medical man can practise his profession scientifically, he should be acquainted, not only with the natural course of the malady he proposes to alleviate, but also with the physiological effects of the drug by which he hopes to reach this end. By observations upon the lower animals, he may also obtain suggestions and information which will materially assist him in relieving and benefiting the human being.

15. *Importance of the Purity of Chloral Hydrate.*—Dr. OSCAR LIEBREICH has recently published a paper in the *Berliner Klinische Wochenschrift*, in which he calls attention to the important subject of the purity of chloral hydrate, and the effect which its deterioration may produce on the patients to whom it is administered, and on its reputation as a remedy. The case, he says, is different from that of such a substance as quinia, the adulteration of which will only reduce, but will not pervert, the proper action of the drug. With chloral and other substances prepared by analogous chemical processes, the result of the manufacture may be the formation of compounds which, if administered, produce an altogether different result from that intended. The process of manufacture is one which requires great care; and it seems that it is at least difficult to insure the purity of chloral, if made in large quantities. Liebig himself, who discovered it, never attempted to make more than a few grammes at once; and Dr. Liebreich was so convinced, when he brought it into notice as a medicinal agent, that purity was necessary for success, that the first supplies were made under his immediate superintendence. At present, it is manufactured in various places; and the result is that, in some parts of the continent, notably in Saxony and Switzerland, it has fallen into disrepute. Dr. Liebreich has made a collection of specimens of the drug used in cases where it has failed to produce its proper action, and possesses, he says, some horrible chemical compounds which he would not venture to give to a human being. He prefers the crystallized form of chloral hydrate as the most stable. It may contain hydrochloric acid; this is no disadvantage if the proportion remain the same; but, if it increase, it indicates that the formation of dangerous compounds may be going on. Sometimes the hypnotic action is increased; this he attributes to the production of chlorine compounds, which are more readily changed into chloroform than chloral itself is. An acid reaction, arising from the formation of trichloroacetic acid, does not show that the chloral is unfit for use, though it weakens its action. In pure chloral, this action is limited; while impure chloral is liable to the constantly increasing production of acid compounds—not trichloroacetic acid—of a deleterious nature. Dr. Liebreich remarks that

the German *Pharmacopœia* is in error in fixing the boiling point of chloral hydrate at 95° Cent. (203° Fahr.). This, he says, is correct for anhydrous chloral; but the boiling point of chloral hydrate is not constant.—*Brit. Med. Journ.*, March 21, 1875.

16. *Ergotin as a Means of Arresting Hemorrhage.*—The following results obtained from some accurately recorded experiments on this drug made by Dr. DRASCHE, Chief Physician to the Rudolph Hospital, are communicated by Dr. C. Schwaighofer to the *Irish Hospital Gazette*, May 1.

It was first determined by experiment on animals, that a strong solution of ergotin when brought into contact with an artery, even when the artery was wounded, had the effect of lessening its calibre and so checking hemorrhage.

This at once led to the conjecture, that if the drug were introduced directly into the circulation, and thus brought into actual contact with the walls of the vessels, its action would be more rapid and effectual than if it entered the system through the stomach. It hence follows that the subcutaneous injection is the most effectual way of administering this remedy. As there is no preparation of ergotin in the Austrian *Pharmacopœia*, only an alcoholic extract of the *secale cornutum*, very similar, however, to the ergotin of Bonjean, the extract was the preparation used in these experiments. Glycerine proved to be the best solvent. Water was found to be not nearly so appropriate, as well from its inferior power as a solvent as because a sediment soon formed in the solution, and the undissolved resinous particles were liable to stop the needle of the injection-syringe and thus greatly increase the mechanical difficulties. Another objection to the watery solution is, that fungus soon forms in it, which at once renders it useless. A solution of 5 grains of ergotin in a drachm of glycerine proved to be the one most suitable for general use. This solution is of a dark brown colour, somewhat translucent, and even after it has stood a considerable time, the amount of sediment deposited is very small. It has another great advantage, viz., that it remains for a long time absolutely free from any fungous growth. A Pravaz's injection syringe, when filled with this solution, contains just a grain of ergotin. The effect of injecting this solution was first tried on several perfectly strong and healthy persons, with the following results: After each injection the number of heart-beats in a minute was lessened by from four to six; a diminution in the size of the arteries was demonstrated by the sphygmograph; the temperature was very slightly elevated, while the respiration remained perfectly undisturbed. The proportion between the amount of fluid imbibed within twenty-four hours and the quantity of urine passed was not affected; the appetite, digestion, and sleep also remained undisturbed. The local effects of the injection deserve notice. Generally, very soon after the injection the skin became reddened; this redness was usually circumscribed, but was sometimes diffused. The time it lasted was variable; in some cases but a very short time, in others for several days, sometimes disappearing for a short time only to return again better marked than ever. In some cases when the redness had disappeared there was left a greenish-yellow discolouration, showing the metamorphosis of the colouring matter of the blood. The redness, if very well marked, was often accompanied by increase of temperature, and pain and tenderness at the point of injection. There was, in some cases, swelling followed by induration, which lasted a considerable time; this happened more especially when the watery solution was used; indeed it was never seen to occur after glycerine. The experiments as to its hæmostatic powers were mostly made on phthisical subjects who had hæmoptysis, either after the usual means, such as *ferri sesquichlor.*, *alum*, *digitalis*, *plumb. acet.*, etc., had been tried in vain, or especially in cases where the hæmoptysis began as an actual hemorrhage. However, the ergotin was also tried in cases of epistaxis, hæmatemesis, hemorrhage from the bowels in enteric fever, and especially in scorbutic hemorrhages, and generally with success, even though the improvement was sometimes only transient. In cases of hæmoptysis the quantity of ergotin that was injected was from 1 to 1½ grains; in exceptional cases this was increased to 7 grains (spread over several days) which was the maximum dose. The local inflammation was always propor-

tional to the strength of solution. The injections were always made in the neighbourhood of the greater pectoral muscle. Usually, shortly after the injection, the skin around the puncture became red and tender, with a sensation of burning and often of pain; sometimes there was swelling and persistent induration with greenish-yellow discolouration of the skin. In four very obstinate cases of hemorrhage in advanced phthisis, where cavities had already formed, the hemorrhage was checked after from one to three injections; indeed in one case a single injection proved sufficient. Even in those cases where the hemorrhage was not at once checked it at all events became much less copious, and frequently only remained as a painful expectoration of coagula, which ceased after a few more injections. The rapid effects produced by the subcutaneous injection of the ergotin were all the more striking, as, shortly before, much larger doses of this drug had proved inert when administered by the mouth. In some cases where a copious hemorrhage had its origin in a large cavity, of course we could not expect ergotin to work miracles, and still only in a single such case was its use absolutely without effect. One phthisical young man, who had been attacked every morning for a week with violent epistaxis which had been treated unsuccessfully for four days with ice and perchloride of iron, was completely cured after two one-grain injections of ergotin. In scorbutus, where the cause of the hemorrhage is want of tone and a liability to rupture in the walls of the vessels, ergotin is particularly useful, especially when other remedies have been tried and have failed. These results show that this remedy is in general practical and effective. To the practitioner it cannot but be most comforting in dangerous cases to have at hand a remedy at once so certain and so easily applied, especially where sudden and profuse hemorrhage calls for immediate action, and where, as too often happens, great difficulty is met with in administering internal remedies.

17. *Active Agent of Ergot.*—Dr. A. WERNICH has recently made some investigations in regard to the active principle of ergot in the Berlin Institute. He finds that the watery extract is far more powerful than either the alcoholic or the ethereal extract. The watery extract, when purified by alcohol and ether, forms a mucous or slimy mass which cannot be dried. The active agent appears to be of the nature of an acid soluble in alcohol when pure, but insoluble when in combination with bases.—*Lancet*, April 4, 1874.

18. *Importance of Salts in Food.*—FOSTER (*Zeitschrift für Biologie*, vol. ix. p. 297) has made some interesting experiments on dogs and pigeons, which show that animals die when inorganic salts are altogether absent from their food, although the other nutritive constituents may be abundant. In all animals, a condition of muscular weakness and tremor occurred, which is best designated by the term general exhaustion. The weakness of individual groups of muscles in the dog, and especially those of the posterior extremities, from the second week of the experiment onwards, gradually assumed a paralytic character, such as is observed when the function of the spinal cord is weakened. The activity of the cerebrum was also impaired, as was evident from the increasing bluntness of the senses and the apathy of the animal. Later on, symptoms of increased excitability often appeared. Thus, when the author quickly entered the room where one of the pigeons had ventured upon the cross bar of the cage, it fell suddenly upon the floor of the cage, and there remained crouched in the ordinary stupid position with its eyes closed and its head drawn in. Dogs always cowered at once, as if terrified, whenever any quick motion was made towards them even from a distance. On one occasion, one of them had an attack of madness, springing at the keeper and barking, but crouching down, trembling and growling, when it heard his voice. On being taken out it ran straight forward, and knocked its head violently against a wall in its way. There was tonic contraction of the muscles of the jaw and neck. After the animal has been deprived of salts for some time, the juices of the intestinal canal either lose their digestive power or are not secreted in proper quantity, and nutrition is thus interfered with. Death takes place, however, from the alterations in the nervous system, before there has been time

for it to occur from inanition. The quantity of salts necessary to life is smaller than is generally supposed, but the exact amount required is still to be determined.—*London Med. Record*, May 13, 1874.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

19. *General Angioleucitis of the Lungs*.—Dr. REYNAUD, Physician to Lariboisière Hospital, describes (*L'Union Médicale*, Nos. 35 and 36, March, 1874) two cases of an affection to which he gives the above name, one observed by himself in his own wards, and the other by his colleague, Dr. Féréol, in his wards.

The study of these two cases leads Dr. R. to the following conclusions:—

1. There exists a lesion of the lungs not hitherto described in our classical treatises, and characterized by a vascular turgescence of all the lymphatic vessels, both superficial and deep-seated.

2. This lesion deserves the name of angioleucitis. Although it has some relation to cancer, particularly to cancer of the stomach, we are not justified in denying that general angioleucitis of the lungs may be developed independently of the existence of any cancerous affection. Probably angioleucitis of the lungs may be simple or specific, at the same time presenting great similarity in an anatomico-pathological point of view.

3. This angioleucitis constitutes a grave complication, and may cause death by the lungs in patients affected with primary lesions of other organs.

20. *Dizziness and its connection with Migraine*.—Dr. T. CLIFFORD ALBUTT states (*Brit. and For. Med.-Chir. Rev.*, April, 1874), "It is most important to be able to assure sufferers from this alarming malady that it is one which is fraught with no more danger to life than a sick headache, for dizziness often comes on in the later life of those who had migraine when younger, comes on, that is, at a time when cerebral symptoms are viewed with growing uneasiness.

A distinguished churchman lately complained to me of such a transient vertigo, which would seize him from time to time, not respecting him even when in the pulpit: for a moment he is confused, he makes a strong effort, the giddiness diminishes, and he is safe. Up to middle life he suffered from migraine in the usual form; now he never has it. Compare this with the state of a clergyman whom I once saw, who comes of a highly nervous stock, who had migraine intensely up to middle life and in whom the migraine then gave way to vertigo. He would be seized with irresistible dizziness, which would hurl him off his feet on to the floor, where he would lie for an hour or two dreading removal. The least attempt to raise his head would always bring on an increase of this distressing symptom and a sense of nausea. After a while he would vomit, and all would come right. This case came under my notice about ten years ago, and I understand that the attacks still recur, but in a much less degree. His health is otherwise good.

"I have another patient to whose case the same description would apply. He has been under my occasional care for some years for this kind of vertigo, ending, when severe, in vomiting. Not many weeks ago he was found in the street clinging to a railing, and was brought to my house. There he remained incapable of raising his head until free vomiting occurred, when he obtained his release. This gentleman had suffered greatly from migraine, as a young man, and nearly all his children have been under my care for nervous affections. Now is there any organic connection between the last and the earlier states of another and similar case which I have now under observation. Mr. X—is a nervous man, and for many years had migraine. Then, as he lost the migraine in middle life, he became subject to the vertigo, and had it in a distressing though not in an extreme form. It rarely went on to vomiting, though he was often

obliged to cling to railings and other supports lest he should fall. Some months ago he had this vertigo—for it seemed in all respects the same—in a terribly aggravated form. He remained so confused that for several days he could not raise his head from his pillow, and he vomited repeatedly but without much relief. Consciousness was never affected. As he became more able to move about, he found that the right hand was ataxic, and his articulation was also struck with ataxy. His right hand, though not weakened, was incapable of precise function; and although he never used wrong words his utterance was clipped and unrythmical. Four or five months have elapsed since his seizure, and he has slowly improved; yet the defects are far from being obliterated, and I fear he is a stricken man. If this seizure was hemorrhagic it was strangely like his preceding attacks, which were undoubtedly migrainous.”

21. *Albuminuria in Cases of Vascular Bronchocele and Exophthalmos.*—Dr. J. WARBURTON BEGBIE, in an interesting article in the *Edinburgh Med. Journal* for April last, points out the occurrence of albuminuria during and after digestion in cases of vascular bronchocele and exophthalmos. This albuminuria he says is evidently temporary and unconnected with any form of renal degeneration. He has never seen so large an amount of albumen in the urine in any other disease when the case of the albuminuria was not inflammatory or organic. In some cases it was an evanescent symptom lasting only for a short time, and when so, only present in limited degree. In others, the albuminuria has been very considerable—it has even been excessive, and it has lasted for weeks, indeed for months—while the other notable symptoms of the complex malady continued, and only disappeared as the latter became relieved or removed. Edema of the lower limbs, although in the first instance calling attention to the condition of the urine, has not been observed to bear any constant relation to the albuminuria; on the contrary, cedema, and sometimes considerable anasarca of the legs, have been present without any appearance of albumen in the urine; and albumen, when present, has generally existed without any form of dropsical swelling. In the most notable cases of albuminuria in connection with vascular bronchocele and exophthalmos, dropsy has not been present.

In prosecuting my inquiry on this subject, a very interesting circumstance became manifest, namely, that the albuminuria was in certain cases limited to the period of digestion—present immediately after a meal, and absent when the person fasted. I had in one case been not a little puzzled by noticing the strange variety presented by the urine within very short periods—the albumen present in considerable quantity one day, and absent the next—present in the urine of the forenoon, and not to be detected in that passed before dinner. By obtaining repeatedly specimens of the urine in this case, and in one or two others, I was able to satisfy myself that in this disease the albuminuria is apt to possess the remarkable character of only occurring during or immediately after the digestion of the food.

In addition to the intermittent character of the coagulability, in the cases seen by Dr. B., the quantity and density of colour of the urine did not deviate from the healthy standard, and still further diligent and repeated examination by the microscope failed to detect the vestige of a cast of any kind—these are to be regarded as proofs of the renal disease being functional and not organic.

22. *Æsophagismus or Spasmodic Closure of the Æsophagus.*—Dr. A. W. FOOT read before the Medical Society of the College of Physicians, Ireland, a description of four cases of this peculiar and not very common affection, which had been under his care in the Meath Hospital. Three of the cases occurred in man, and one in a female. In none was there any evidence of organic disease or of hysteria; and none of them were cases of what Sir Henry Marsh had termed the regurgitating disease. Dr. Foot described, *seriatim*, the symptoms in each case, which so far resembled one another in character: (1) In suddenness of occurrence; (2) In there being a more or less intermitting dysphagia, which was greater with solids than with fluids, and more likely to be excited

by cold fluids than by hot, as also by anything sour; (3) In the occurrence of œsophageal vomiting; and (4) in the co-existence of hiccough as a symptom. In two of the cases there was no cause assigned for the occurrence of the complaint, in the third it was attributed to a squeeze of the throat, in the fourth to intense grief. The whole four occurred in persons of the disposition called "nervous;" but there was no reason to believe that their symptoms were either feigned or exaggerated, or in any way under their control. The dysphagia was certainly œsophageal, not pharyngeal, and therefore beyond the influence of the will. The diagnosis of œsophagismus was, Dr. Foot observed, based upon the suddenness of its occurrence, the variability of its intensity with various kinds of food, its intermittence, the co-existence of other symptoms, especially hiccough, and the absence of other causes of dysphagia—mechanical, inflammatory, or paralytic. The œsophageal vomiting in these cases is manifestly different from gastric vomiting, in the absence of nausea and of contraction of the muscles of the stomach or abdomen, nor has the returned food any sour or acid taste. In conclusion, Dr. Foot referred to Dr. Graves' remarks on a "curious affection of the organs of deglutition,"¹ and to Sir H. Marsh's papers on "a peculiar morbid affection of the stomach, characterized by regurgitation of its contents without nausea,"² and remarked that cases of regurgitation appear to be more common in young females, and œsophagismus in young males.

The Chairman said that his father had had an attack of spasm of œsophagus: and that for an entire week he was unable to swallow either fluids or solids. There was no fever. The idea of death from starvation in the midst of plenty was before him, when suddenly, without any special treatment that he (the Chairman) could remember, the power of deglutition returned.

Dr. Atthill said that these cases do not prove fatal; and as showing the difficulty of deglutition that is caused by some kinds of foods more than by others, related the case of a boy, aged 12, who was under his observation, and who was unable to swallow meat, or food which required mastication.

Dr. MacSwiney could recall three cases which corresponded with the description Dr. Foot had given of the affection. They were all in men between the ages of 18 and 30, and all recovered. In one of these cases there was an enormous secretion of mucus; and frequently a morsel of food which had been swallowed one day, would be ejected unaltered, and recognized twenty-four or thirty hours subsequently. In this case there was also an enormous dilatation of the œsophagus above the seat of spasm; warm liquids alone could be swallowed. Passing a probang gave great relief. Dr. MacSwiney was led to believe that there was sanguineous congestion of the œsophageal mucous membrane, from the fact that in one of his cases blood was brought up at intervals in small quantities. Antispasmodics alone seemed to give relief in these cases, and hydrocyanic acid, especially, was *the* remedy.

Dr. H. Kennedy has seen five or six cases of this kind: all recovered. Sometimes there was a total stoppage, and other cases seemed to be able to get down a little. One of his cases had been attended with much pain. The administration of nitrate of silver in quarter-grain doses, in solution, had been particularly useful in one case. Dr. Kennedy, if he had another case, would recommend warm baths, and nitrate of silver, internally, combined with opium. He thought the disease was something of a similar kind to that affecting other parts of the body, *e. g.*, the urethra, bowels, etc. Dr. Kennedy also referred to the case of a medical man who could not swallow when in company.

Dr. W. G. Smith related the history of a case that has been under his observation for seven years. The patient had cholera in 1866. During convalescence from it he had, for the first time, an attack of spasm of the œsophagus, and could get no fluid or solid into the stomach. The food regurgitated from the œsophagus in a few moments. He had pain under left scapula, hiccough, and a copious secretion of saliva—amounting on some occasions to four cupsful

¹ Dub. Med. Journal, iii., 167.

² Dub. Med. Journal, xxiii., 437: and Dub. Quart. Journal Medical Science, xvi., 681.

a day—took place. The spasms occur intermittingly. On one occasion an attack lasted 100 hours. Dr. Smith had twice observed that after attempting to swallow milk during a spasm, a conical cast of curd, the diameter of the oesophagus, was thrown up. There was no evidence of hysteria or of organic disease. The effect of treatment was most capricious. On one occasion, during a spasm, Dr. Smith injected gr. $\frac{1}{60}$ of apomorphia. In five minutes afterwards the patient was nauseated, and vomiting and purging followed, but the spasm subsequently returned. Bearing out the remarks of Dr. Atthill, this patient was peculiarly liable to a spasm when he swallowed meat. He was not so subject to the attacks now as he has been.—*Irish Hospital Gazette*, April 1, 1874.

23. *Extension of Melano-sarcoma by Embolism.*—Prof. EBORTH, of Zurich, records an interesting case showing how the extension of tumours to distant parts may occur. The eyeball was extirpated for melano-sarcoma originating apparently in the choroid. After 19 months, signs of tumour in the liver appeared, followed by rapid emaciation and death in other two months. There was found after death extensive melanoid sarcoma of the liver, and in addition melanoid and other cells were observed in the bloodvessels of the kidney and spleen. There was evidently here a passage of the solid elements of the tumour into the blood, and a direct infection of distant parts by these elements. This observation may be important as indicating how tumours may spread. In this case the cells were pigmented so that they could be readily recognized, and we must suppose that in other cases where their recognition is not so easy, a similar transportation and spread of the tumour by embolism takes place.—*Glasgow Med. Journ.*, Jan. 1874, from *Virchow's Archiv* for July, 1873.

24. *Paralysis of the Radial Nerve caused by an unusual mode of Lead-Poisoning.*—Dr. ALTHAUS read before the Clinical Society of London (April 25th, 1874), notes of the case of a chemist who was laid up for four months with erysipelas. Some time after, he lost the use of the muscles supplied by the radial nerve, so that he was unable to use his hand and fingers. The author found, by using electrical tests, that the paralysis must be owing to the influence of lead. There are three different forms of paralysis of the radial nerve—viz., one caused by injury, a second by the influence of wet and cold, and a third by saturnine poisoning; and these may be distinguished from each other by the following signs. In *rheumatic paralysis*, the farado-muscular excitability is generally normal; there is no, or only a slight degree of, anæsthesia of the skin; and the supinator muscles suffer just as much as the extensors. In *traumatic paralysis*, the farado-muscular excitability is lost; there is anæsthesia of the skin; and the supinators suffer equally with the extensors. Finally, in *saturnine paralysis*, farado-muscular excitability is lost; there is no anæsthesia of the skin; and the supinators are perfectly healthy. This last group of symptoms being present, search was made for a source of lead poisoning; and it was at last found out that the patient had used an ounce of the unguentum plumbi subacetatis compositum as a dressing for the sore on his thigh three times daily for a month. Lead is absorbed even by a surface not denuded of its cuticle; but its absorption was in this case considerably facilitated by the highly vascular condition of the sore, and the length of time during which the lead ointment, which was spread on lint, remained on the surface of the wound. Iodide of potassium was given for three weeks without relief, but three applications of the continuous current completely restored the use of the limb. Dr. Althaus concluded his paper with some remarks on absorption of lead in general, and on the seat of the paralyzing lesion in cases of lead-palsy, showing that the loss of power is not owing to an affection of the nervous centres or the muscles, but of the peripheral nerve-trunks. He recommended to resort early to treatment by the continuous current in these cases; as, in the latter stages of the complaint, when muscular atrophy and contraction of the antagonists has set in, the effect of the same treatment is much more slow, and not nearly as complete, as in the earlier stages of the affection.—Mr. LEE

related the case of a young woman, who gradually declined in health, had loss of tone, etc., and whose ailment was traced to her occupation of shaking out cloths in a room full of dust, lead being found in the dust.—*Brit. Med. Journ.*, May 16, 1874.

25. *The Local Treatment of Lung Cavities*.—Prof. W. MOSLER, of Griefswald (*Berlin Klin. Wochenschrift*, October 27, 1873, translated in *The Clinic*, December 13, 1873), made the attempt last year to introduce remedies into the lung cavities from the outside, through the walls of the thorax, and gives the following account of his experience:—

My first attempt was in a case of phthisis in the last stage of the disease. I did not expect either cure or improvement. I only wished to demonstrate the possibility of the method. It was the case of a labourer, æt. 51, affected with right-sided pneumonia since 1869. He had had several attacks of hæmoptysis, and had become emaciated in extreme degree. In the right apex and in front was a superficial cavity reaching down to the fourth rib and of easy demonstration.

On November 1, 1872, I pushed through the thorax wall, second intercostal space, 6 ctm. from the right border of the sternum, a tolerably large canula of the well-known aspiration syringe of Thiersh. I then injected through this canula 20 cem. of a dilute solution of the permanganate of potash. The syringe was then unscrewed from the canula, which was permitted to remain, and on three following days the injection of the same quantity was repeated. On the fourth day the canula became occluded and was removed. *The patient suffered, meanwhile, not the least inconvenience.* I was encouraged, thus, to further experiments.

In February, 1873, I repeated this experiment in a case of left-sided bronchiectatic cavity whose secretion had assumed a fetid, putrid character. After five injections, which were borne without difficulty, the secretion had changed for the better and the general condition had materially improved. I considered myself justified, then, in repeating this experiment in another way, *in order to give the secretion free exit and escape.*

In the case of a painter, æt. 49, who had been treated in my clinic for five years for a bronchiectatic cavity of the right upper lobe, who had had several attacks of hæmoptysis, suffered often with fever, had become extremely emaciated, and, besides all this, had amyloid degeneration of the kidney, as shown by an abundant deposit of albumen in his urine, I made an opening, July 2, 1873, assisted by my colleague Prof. Hüter, into the very superficial cavity, in the following way:—

A long incision (3 ctm.) dividing the skin and superficial intercostal muscles, commencing about $5\frac{1}{2}$ ctm. from the right border of the sternum, was made along the upper border of the third rib. The long duration of the affection pre-implied a firm adhesion between the two layers of the pleura, so after dilatation of the incision through the muscle, the wall of the cavity was gradually opened with a suitable pair of forceps, penetrating more and more deeply into the bottom of the wound. A whistling sound in inspiration and the escape of a purulent secretion mingled with air bubbles furnished the certain proof that the cavity had been opened. No hemorrhage occurred. After the opening into the cavity had been somewhat dilated, a pretty large silver drainage tube was introduced into the cavity and fastened with plaster to the wall of the chest. Pledgets of carbolized lint and an ice bladder were then applied. The patient endured the operation very well.

On the evening of the same day the temperature was 37.8° C. the pulse 84, respirations 36. General condition good. *Pus flowed through the canula abundantly, particularly in coughing.* The bandage had to be renewed several times during the day. *Cough and secretion were both less.*

On July 12, a hæmoptysis occurred, perhaps as the result of granulation formation in the cavity. A dilute solution of liquor ferri sesquichlorati was blown through the canula, whereupon the hemorrhage soon ceased.

Subsequently, a dilute solution of carbolic acid and tincture of iodine was

brought into the cavity, twice daily, by the same *pulverisateur*. He declared that he felt it enter the cavity.

Injections of larger quantities of a solution of permanganate of potash by means of Esmarch's irrigator were not borne so well. A sense of tightness followed and febrile excitation. I desisted from their use thereupon and continued the use of the atomized fluid, satisfied that a sufficient quantity entered the cavity through the canula on deep ins- and expiration.

The pus had now assumed a laudable character and was less profuse. There could be no doubt that this disinfection had a better result than the inhalation of carbolic acid by the mouth.

Percussion showed a more marked cracked-pot sound than before, probably in consequence of the external opening. The rales, however, were less intense. The patient had no especial complaints to make as to any trouble in the lungs. His condition was better after than before the operation. The process in the lungs, moreover, seemed to have made no essential advance. There was, however, no improvement in the general status, as was expected there should be, at the start. The albumen in the urine increased, and the general strength reduced so that he was confined to bed.

On my return to Griefswald, Oct. 1, the condition of the patient had so far changed for the worse that he continued to lose strength in spite of nourishment and stimulation, and albumen continued to increase in the urine. Emaciation was very marked, appetite and stool normal. Fever had not persisted. The temperature had never risen above 37.6° C., morning or evening. There was but very little cough and expectoration. Pus continued to flow freely through the canula, however, on which account I continued the insufflation through the canula of dilute carbolic acid twice daily. Physical examination revealed no essential change. The process in the lungs had not advanced. Respiratory difficulties had been hitherto but little marked, occasionally there was a distressing fulness and sense of pressure in the epigastrium.

On Oct. 3, his condition became markedly worse. The heart's action was much reduced, indications of collapse set in. The temperature fell to 36.6° C., the pulse was barely perceptible, and there was complaint of dyspnoea. Stimulants effected no improvement. On the next day over the whole left lung there could be heard fine rales which increased in intensity. He died with manifestations of cardiac paralysis, on Oct. 5, at $7\frac{1}{2}$ P. M.

The *post-mortem* revealed an extremely emaciated body, subcutaneous and muscular tissues markedly atrophic. After opening the thorax, the left lung retracted well; *the layers of the right pleurae were perfectly adherent.* The left lung firmly adhered at the apex, less in the region of the posterior section of the lower lobes. On section, the upper as well as the lower lobes seemed vascular, their substance containing in small numbers, partly in discreet form, partly in small circular groups, grayish-white nodules. The mucous membrane of the bronchi was slightly injected, else normal. *The right lung in its whole extent, most markedly from the third rib upwards, was solidly adherent to the pleura costalis.* After removal it showed from its apex to the border of the lower lobe, a whitish pseudo-membrane of several lines thickness and of almost cartilaginous consistence. *At the lower lobe is a canal running obliquely from before and below, backwards and upwards, with smooth walls, and of the diameter of the canula above described.* This canal leads to a cavity which takes up the greatest part of the upper lobe. The cavity is filled with yellowish purulent fluid. The inner wall of the cavity is marked by projecting prominences differing in their reddish colour from other parts of the wall of the cavity, which have a grayish-black colour and smooth surface. The prominences show distinctly in places a *feebly granulated surface.* A watery reddish tinged fluid exudes on pressure from the cut surface of the lower lobe. Here, too, are to be seen in very small numbers discreet or grouped grayish nodules, of the size of a barleycorn.

I believe I am justified in one statement as a certain conclusion from these experiments, viz., *that the local treatment of lung cavities can be effected.*

As is well known, such a proposition was made by Barry in 1726, and renewed

later by Masse, v. Herff, Hooken¹ without, however, any practical results. Numerous objections were urged, in regard to the difficulty of diagnosis and successful accomplishment of the operation. The great advances of modern medicine and surgery, in great measure, remove these fears.

As to the final conclusion concerning the value of this operation, opinions will differ. Probably the conclusion will be the establishment of different indications. The cases communicated show that the operation has value as a symptomatic method of treatment. The condition of the last patient was better after than before the opening. The cough was less distressing after means of escape was offered to the pus. And in consequence of the disinfection of the cavities, the *fever was less*.

There can be no doubt that my experiments have proven one fact, viz., that the lung is more tolerant of external manipulation, that these external attacks are less dangerous and more easily executed than has been heretofore believed.

Dr. WM. PEPPER, unaware of these observations, treated (*Philadelphia Medical Times*, March 14, 1874) three cases, in February, 1874, by injections through the chest-wall, and remarks that it is probable that this mode of treatment will find one of its most successful fields of application in chronic non-tuberculous cavities in the lungs, in cases where the remaining lung-tissue has not become the seat of secondary tuberculous formations. It is of course uncertain how much curative action we may be able to exert in such cases by any local application made through a canula. In the only case I have reported where the treatment has been continued long enough to produce any decided action, it is unquestionable that a certain degree of positive improvement has occurred both in general symptoms and local signs. And I am encouraged to hope that, with further experience, definite modes of treatment may be formulated which will prove of material benefit in this hopeless class of cases.

Further, I cannot see why, if it be not injurious to pass a delicate needle through the infiltrated wall of a cavity, we may not introduce it into the centre of superficial circumscribed indurations or caseous infiltrations of the lung-tissue, and make such injections as may tend to induce absorption or reparative action. Finally, it appears to me that we have in this mode of making local applications to the lung-tissue, a valuable means of treating some cases of severe hæmoptysis, especially when the hemorrhage proceeds from a well-defined seat of disease.

In regard to the mode of making the puncture, I have hitherto employed the finest (No. 1) of the needles accompanying Dieulafoy's aspirator, and have used it with the "previous vacuum" attached. For the first exploratory diagnostic puncture it is probably desirable to employ an aspirator, as it would also be if it were desired to empty such cavities before injecting them. But for the continuance of the treatment it will perhaps be quite as well to use a capillary canula, with trocar which can be withdrawn, so that a syringe can be fitted to the cannula and the injection made. I have employed local anæsthesia by freezing, and have directed the patients to take a full breath and to hold it before the puncture was made.

The only fluid which I have as yet injected has been dilute Lugol's solution (Miv to f3j), of which from four to ten minims have been injected. The entire absence of signs of irritation makes me confident that a larger quantity could be introduced without injury. This substance appeared suitable for the cases in which I have thus far operated. It is probable that other solutions, astringent or antiseptic, may be found preferable in some cases. In cases of local consolidations, solutions of iodine might also be expected to prove most beneficial.

I design employing a dilute solution of Monsel's salt for injection in suitable cases of serious hæmoptysis.

The practical value of this mode of treating pulmonary diseases is as yet un-

¹ C. Canstatt's *Specielle Pathologie und Therapie vom klinischen Standpunkte* aus bearbeitet. Supplement to 1 and 2 ed., by Dr. E. H. Henoch, Erlangen, 1854. Notwithstanding numerous efforts I have not succeeded in obtaining the original papers of these authors.

certain. But it has appeared to me that, considering the almost hopeless nature of some of these lesions, the proof that a puncture may be made into the lung-tissue and remedial agents brought into direct contact with the seat of disease without any serious danger, calls for a patient trial of it.

Dr. JAMES H. HUTCHINSON (*Phil. Med. Times*, May 30, 1874) cites a number of authors to prove that the above suggestions are not novel, and believes that the operation is not one which is likely to result in good to the patient. In the first place, the presumption in regard to its usefulness is against an operation which, after having enjoyed a brief popularity during at least three or four different periods, has been so utterly forgotten that it has been as many times proposed as entirely new, and is certainly against one in which the opportunities for performing it would be so frequent as they are in this. The quotations which we have introduced above demonstrate with sufficient clearness that the lung may in many instances be laid bare and punctured without apparent injury to the patient. We are inclined to think that this is by no means uniformly the case. In one of the cases reported by Dr. Pepper a slight hemorrhage followed the introduction of the aspirator; and the same accident occurred in the operations done by Dr. Mosler and Dr. Hastings. We are, moreover, very strongly convinced of the fallacy of the argument that, because punctured wounds of the lungs in healthy individuals generally do well, their infliction upon consumptives is not likely to be followed by bad results. Niemeyer—we believe (for we quote him at second hand)—goes so far as to say that the inflammation excited by wounds of the lungs usually terminates in phthisis; but, admitting that this distinguished physician may push his conclusions as to the nature and origin of this disease to an unwarrantable length, there are certain differences in the anatomy of the lung in health and disease which ought not to be overlooked. Caseous degeneration is not the only change which is observed in phthisis. There is in addition to this, in most cases, a development of connective tissue, the effect of which will be to enlarge and keep open the wound made by the aspirator or trocar, and thus to allow the escape of the contents of the cavity into the pleural sac whenever this is not prevented by firm adhesion; and that cavities are not always protected by adhesions is shown by the occasional occurrence of pneumo-thorax from their rupture. Moreover, the opinion that injections may be of service in the treatment of phthisis rests, we think, upon a mistaken therapeutic basis. In certain conditions of the serous membranes these are unquestionably useful by exciting inflammation; but a little reflection will convince any one who has abandoned in whole or in part the theory which makes phthisis the result of tubercular deposit that this is the very last thing to be desired in this disease. The object aimed at in the management of phthisis, and especially in those local cases in which Dr. Pepper thinks the injections are most likely to be useful, is to allay inflammatory action, not to excite it. We therefore are unable to see how they can be productive of any good; on the contrary, if they light up an inflammatory process in the walls of the cavity, this will be very likely to extend to the circumjacent tissue, and thus the disease, which may have been previously held in abeyance, be roused into activity.

In conclusion, we have only to add that we never condemn a plan of treatment on purely theoretical grounds, and will gladly adopt the one under consideration if the result of further experiments shall convince us of the incorrectness of the unfavourable opinion we have formed of it. In the mean time, however, we shall remain in full accord with Dr. Hughes Bennett,¹ who thinks that the result of all operative interference in phthisis has been "what an intelligent consideration of the pathology of the disease might have anticipated—a uniform failure."

26. *Employment of Bromide of Potassium as an Auxiliary in the Treatment of Intermittent Fevers.*—Dr. VALLIN does not question the general efficacy of quinia in the treatment of intermittent fevers, but he observes that there are some rare cases where, in spite of the judicious and prolonged use of this alka-

¹ Reynold's System of Medicine, vol. iii. p. 589.

loid, the malady continues, and in such circumstances the bromide of potassium appears to be beneficial as a subordinate agent. A case seen by Dr. Vallin in the hospital of Batna, in Algeria, first drew his attention to the subject. A patient suffering from ague had been treated in vain by the sulphate of quinia, given by the mouth, in injections, and hypodermically; notwithstanding these and other similar measures the disease returned every morning at the same time and with great and extraordinary violence. Dr. Vallin was therefore induced to ask himself whether in such a case there was not an unusual complication of disorder of the nervous system together with the ordinary paludal cachexia, and hence he thought of employing the bromide of potassium, which appears to have the power of allaying spinal irritation, and is therefore used in epileptic and other kindred affections. At the end of three days after employing the bromide the fever disappeared for the first time for three weeks and did not reappear for a week. In six other cases he employed the same remedy, with results somewhat different, but generally satisfactory. He thinks that the bromide probably acts less against the periodicity of the fever than against some concomitant disorder of the cerebro-spinal functions; that perhaps an exaggerated sensibility of the spinal cord or some nervous exhaustion may favour the return of the paroxysms; and that the bromide may in such cases, by calming the nervous excitement, assist the action of the quinia. Whatever may be the explanation, the results were satisfactory in several cases which are recorded by Dr. Vallin; four were instances where the treatment was certainly beneficial, but in two others the results were doubtful, and in three more the treatment failed altogether. In an additional case mentioned, a ward attendant, who had suffered previously from attacks of fever, and subsequently had an attack of neuralgia which resisted quinia and hypodermic injections of morphia, was relieved most materially by the use of the bromide of potassium in large doses, which not only seemed to cut short some of the paroxysms, but to render others more supportable, and to allow the renewed use of the sulphate of quinia and thus complete the cure.—*Brit. and For. Med.-Chir. Rev.*, April, 1874, from *Bull. Gén. de Thérap.*, Nov. 30, 1873.

27. *Carbolic Acid in Intermittent Fever.*—Surgeon McNALLY states (*Indian Med. Gaz.*, April 1, 1874) that he made trial of carbolic acid in the treatment of uncomplicated intermittent fever during an extensive prevalence of this disease in the 3d Regiment, at Secunderabad. "These trials," he says, "prove at least that carbolic acid is much inferior to any of the other remedies employed. It is now my belief that this medicine is of *no value whatever in the treatment of intermittent fever*, and that the patients would have got well as soon with the usual aid of a purgative, rest, and a blanket. In some cases (not recorded) a few doses of quinia or of quinidia were sufficient for cure after the marked failure of carbolic acid. I am not in a position to speak positively with regard to the reputed diaphoretic action of carbolic acid, but I think it is very doubtful. Abundant diaphoresis certainly did occur in the patients who were taking it, but also occurred in the patients who were not. Irritability of stomach was a common accompaniment of the fever which prevailed in this corps during the past year; and, contrary to what might be expected, carbolic acid did not seem to alleviate it in any case. These observations are, I think, sufficient to establish that carbolic acid cannot be relied upon in the general treatment of ague, and that its value in any case is, to say the least, exceedingly problematical."

28. *Hypodermic Injection of Carbolic Acid in Erysipelas.*—Dr. AUFRECHT, of Magdeburg, having last year lost four patients of advanced age who were attacked by erysipelas of the extremities after injury, determined to try the effect of carbolic acid, and in a short paper in the *Centralblatt* for February 21, he communicates the results which he obtained in two cases. If (he observes) it be true that erysipelas in such cases as these arises from the penetration of organisms into the subcutaneous tissue, and their multiplication there, and if carbolic acid possess the power of destroying such organisms or of impeding their injurious influence, this substance should be able to prevent the

spreading of the erysipelas, and to a certain extent diminish its danger. In order to ascertain whether carbolic acid may be hypodermically employed without any ill consequence, he experimented upon himself with a 1 per cent. solution, of which he threw in six decigrammes at a time—*i. e.*, the amount contained in an ordinary Pravaz's syringe. Neither local nor general ill-effect resulted. Since then he has employed the injection in two cases—the one a woman aged fifty-six, with erysipelas of the forearm and the hand, arising from a slight abrasion; and the other a man, aged eighty-two, with erysipelas of the thigh following slight ulceration of a cicatrix. In the first case five injections were employed during three successive days, and in the second four injections within two days. The injections were thrown into the sound subcutaneous tissue just beyond the margin of the erysipelas as it advanced towards the trunk. Its progress was at once arrested in the direction where the injections were made, the injection being repeated in consequence of some insular erysipelas appearing beyond the first injection-points. More remarkable still than this limitation of the erysipelas was the decided influence of the injections in diminishing the febrile action and the frequency of the pulse, and in inducing a general improvement in the patients' condition. Convalescence was quite satisfactory in both patients.—*Med. Times and Gaz.*, March 28, 1874.

29. *Guarana in Chronic Rheumatism.*—Mr. E. A. RAWSON states (*Irish Hosp. Gaz.*, April 15th, 1874) that when suffering severely from lumbago, and other remedies failing, he tried guarana as an experiment. He took 15 grs. in hot water, with cream and sugar, and experienced entire relief from pain for 24 hours. When the lumbago returned he took another dose with the same result. "I gradually," he says, "increased the dose to 40 grs., and took it regularly, once a day, for about a week. The lumbago disappeared. I gave up the guarana, and in a few days the pain in the back returned. A 40 gr. dose removed it, and it did not return for several days afterwards. Now, whenever it does, I have my remedy at hand. During the last month I have experimented largely with guarana on a variety of patients, rich and poor. The results vary. When the pain is acute, coming on with sharp stings, guarana acts like magic; when it is of a dull, aching character, the drug is slower in its action, and several doses must be taken before any decided benefit can be perceived.

"I have come to the following conclusion, viz., that whenever the fibrous envelopes of nerves, the aponeurotic sheath of muscles, the fasciæ or tendons are the parts affected, guarana gives, if not instantaneous, at least very immediate relief, which will last from twelve to twenty-four hours; and I confidently expect that perseverance in the use of the drug, gradually increasing the dose up to 40 grs., will entirely remove any of the above mentioned kinds of rheumatism.

"Of the good effects of guarana on nervous hemicrania there is no doubt; and I trust it will prove, in other hands, as valuable against rheumatism as it has in mine."

30. *Gelsemium in Odontalgia and Facial Neuralgia.*—Dr. J. SAWYER, of London, and Dr. E. MACKAY, of Birmingham, extol (*Brit. Med. Journ.*, May 2) the efficacy of tincture of gelsemium, made from two ounces of coarsely powdered gelsemium root macerated in a pint of rectified spirit, for the relief of odontalgia and facial neuralgia. The dose is from five to twenty drops every six hours. Dr. Sawyer says that out of about twenty cases the use of the remedy has not failed to give decided and lasting relief in more than three or four.

31. *Internal Use of Sulphate of Atropia for Profuse Sweating.*—Dr. FRANTZEL has tested the power of sulphate of atropia in checking profuse sweating in 75 cases in the Charité in Berlin, and is very well satisfied with the results obtained. He gives $\frac{1}{10}$ th of a grain in pill, and in only four cases was he required to discontinue it on account of diarrhœa. He uses it not only in the sweating of phthisis but also in that of other diseases, such as acute rheumatism, or convalescence from trichiniasis. The author supposes that it

acts by constricting the small arteries which supply blood to the sweat-glands, the sweating being probably due to relaxation of these arteries. Several observers have shown that atropia produces marked narrowing of small arteries. The dryness of the throat and mouth, and the parchment-like dryness of the skin in the advanced stage of atropia poisoning, are also probably due to constriction of the small arteries.—*Glasgow Med. Journ.*, Jan. 1874, from *Virchow's Archiv*, July, 1873.

32. *Treatment of Eczema, Lupus, and Cancer by Gurjon Oil.*—Prof. ERASMUS WILSON, in a communication made to the Medical Society of London, April 13th, stated that he had used a liniment composed of equal parts of the gurjon oil and lime-water in cases of painful eczema, in lupus, and in cancer, with very encouraging results; and stated that Mr. Hancock had applied it in a case of cancer of the skin with the effect of dispersing tubercles and healing ulceration; but its most useful property was that of relieving pain. Mr. Wilson suggested that this very simple remedy deserved a trial at the hands of the profession, and believed that it would be found a valuable agent of cure in many affections where the skin was painfully attacked.—*Lancet*, May 16, 1874.

33. *Treatment of Leprosy by Gurjon Oil.*—The Nos. of *The Indian Medical Gazette* for February and March of the present year contain a very interesting report on this subject by Surgeon-Major J. DOUGALL, M.D. When stationed at Port Blair, India, Dr. D. became deeply interested for the wretched condition of the patients suffering there from leprosy, and finding the existing mode of treating the disease inefficacious, he determined to try the oleo-resinous substance—known in commerce as gurjon oil—obtained in abundance from the *Dipterocarpus laevis* and other trees of allied genera. He tried this oil in various combinations, and he decided that the best mode of using it externally was in the form of an ointment made by violently agitating together three parts of lime-water with one part of gurjon oil until it becomes of the consistence of soft butter. He also used it internally in a thinner mixture composed of equal parts of lime-water and gurjon oil.

The following was the treatment adopted: The patients were made early every morning to wash themselves in a small stream using finely pulverized dry earth as a detergent. They were then given half an ounce of the lime-water and oil mixture internally, and obliged to rub themselves all over for two hours with the ointment. Another dose of the mixture was given in the afternoon, and the rubbing with the ointment repeated.

"Of the 24 cases under treatment here during the past six months," says Dr. D., "every one of them has decidedly benefited by its use, every ulcer without exception has healed up, and not broken out again, but the most marked benefit has been derived by those suffering from the anæsthetic form of the disease.

"The first notable improvement was in relation to the leprous ulcers, which began to heal, and at the same time, anæsthesia gradually diminished."

"The change the tubercles undergo in the process of reduction is worthy of notice. After the lapse of some time the tubercle seems to become more movable and loose at the base, and it is felt to be softer there than at the apex. This softening process gradually approaches the surface, and at last a watery bleb forms, and this bleb soon bursts and allows a thin serous clear fluid to escape, and a marked diminution is then observed as regards the size of the tubercle as compared with its former dimensions. This may take place two or three times until the tubercle is quite reduced. I found it expedited matters very much to puncture these watery vesicles with the point of a lancet, and it allowed the fluid to escape without pain or inconvenience to the patient, and did not interfere with the rubbing process. I have seen a tubercle on the helix of the ear entirely subside after one formation of the vesicle.

"The gurjon ointment, though thoroughly rubbed on the surface of the body for four hours every day, produced no vesications directly from its action, and

causes no pain whatever; it seems to be, through its constitutional effects, that the tubercles soften from within outwards. I have rubbed it over my own arm, and it did not cause the slightest pain or redness though allowed to remain on all night.

"The emulsion, as I have already explained, is not disagreeable to the palate, and at first it had no well-marked influence upon the digestive system, but when the dose was increased to one drachm twice a day it improved the appetite, and at the same time acted as a mild laxative.

"It also had a distinct diuretic effect, and the larger doses (four drachms) twice a day caused several large healthy motions, in fact acted as a powerful diuretic and evacuant."

Limited as has been the duration of this mode of treatment, it has been long enough, Dr. D. says, to show "that leprosy, both tubercular and anæsthetic, can not only be arrested, but the condition of the lepers can be greatly ameliorated, and men here, who had not for years been able to do more than drag out a miserable helpless existence, are now able and willing to work, and every sore is quite healed. In some instances the sores have been healed up for more than three months, and show no tendency to re-open, and these desirable results have been attained simply by the use of gurjon oil and lime-water, substances which are so cheap as to be within the reach of all. No change whatever has been made even in the most minute particular in regard to the diet of the lepers, from what they have been getting for years past, and they get their fish four times a week as usual. I always thought, and still consider, the men under-fed; still I made no change, in order to avoid complications, and to test the gurjon oil on its merits."

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY.

34. *Intravenous Injection of Chloral into the Veins for the Production of Anæsthesia in Surgical Operations and also for the cure of Tetanus.*—Prof. ORÉ of Bordeaux communicated to the Academy of Sciences, March 2d, a case in which he induced anæsthesia, in a patient on whom he had occasion to excise the calcaneum for necrosis, by the injection of chloral into the veins. One of the radial veins was opened by a capillary trocar, and a solution of chloral, ten grammes to thirty of water, was slowly introduced, and when twelve grammes of the solution had been thrown in, the patient, whose respiration continued perfectly regular, declared that he felt quite overcome with the desire to sleep. However, the injection was slowly continued until twenty-two grammes had entered the vein, and the desire to sleep had become quite irresistible, the patient resembling a corpse in appearance. Not less than ten minutes were required to produce this result. The operation was now proceeded with, and lasted twenty-five minutes. During the whole time the patient continued in the calmest of sleep, not the slightest cry or moan being heard, and the complete immobility of his features sufficiently indicating the utter annihilation of all sensibility. The respiration continued calm and regular, and, what is remarkable, unattended with those momentary signs of asphyxia which had always been observed in the injections when made in animals, and in the two patients so treated for tetanus. After the operation had been completed, the patient would in all probability have continued for hours in this immovable condition, had not a means of arousing him been tried, which had been found so efficacious in animals—namely, the electric current. One of the conductors having been placed over the left side of the neck, and the other over the epigastrium, after the passage of the current, with forcible and rapid intermissions, the patient awoke, and, sitting up in bed, began talking and shaking hands with everybody around him. He declared that he had felt or perceived nothing whatever. This state of ebriety continued for more than an hour, and was

terminated by crying. He then fell into a quiet sleep, and all anæsthetic effect passed away. "Thus, in this way," Professor Oré observes, "we are enabled to graduate the exact dose of the anæsthetic substance, so as to induce insensibility for as long as may be necessary, and then dissipate the effects at will. Is not this a true solution of the problem of anæsthesia?"

M. Oré feels assured that the complete absence of all irritation of the respiratory organs, as contrasted with what he had observed in his experiments, was due to the precautions he had taken. Believing that the slight appearance of asphyxia, attempts at expuition, etc., which he had observed in animals at the moment of introducing the chloral, were due to the presence of very minute foreign bodies in the solution, he took the precaution of interposing in the syringe employed in this case a sieve which intercepted even the smallest particles.—*L'Union Médicale*, May 12.

Prof. Oré draws the following conclusions (*La Tribune Médicale*, March 22d, 1874):—

1. That intravenous injections are harmless. In the case communicated there was not the slightest trace of phlebitis. There was only a small abscess caused by the penetration of some chloral into the cellular tissue. M. Oré's experiments on animals has taught him that this always occurs, when a large dose is injected subcutaneously. This leads to the important conclusion for the clinician, that the subcutaneous method is the most defective one for the administration of chloral.

2. A second conclusion is the rapid and long insensibility produced by this substance when it is placed in immediate contact with the blood.

3. Hydrate of chloral injected into the veins rapidly arrests tetanic symptoms. Three injections of ten grains each at intervals of 24 hours, produced with sleep complete paralysis of sensibility and motility. M. Oré particularly insists on the circumstance that a small dose of chloral suffices to produce a favourable result.

Finally M. Oré remarks in order that chloral injected into the veins shall arrest tetanic symptoms, it should be administered in a sufficient dose to almost immediately paralyze the reflex action of the spinal cord, and to momentarily completely paralyze motion and sensibility. The dose of ten grammes at each injection appears to him to be sufficient to produce the effect.

Two cases of tetanus treated by intravenous injections of chloral were communicated to the Surgical Society of Paris (*L'Union Médicale*, April 14th), one by M. CRUVEILHIER, the other by M. LEON LABBÉ; in both the result was unfortunate. M. Cruveilhier thinks that the treatment may have contributed to the result in his case, but M. Labbé does not admit that such was the fact in his case; he even believes that his patient might have been saved, had it been possible to have performed a greater number of injections of chloral.

Some remarks made at the meeting of the Surgical Society of Paris, unfavourable to intravenous injections, induced Prof. Oré to send a note to that Society, which was read at their meeting on the 13th of May, and which gave rise to an animated discussion.

Prof. Oré stated (*Gaz. Hebdom.*, May 22) that in injecting the solution into the veins, he has never observed the slightest symptom which could give rise to any fear of the coagulation of the blood in the vessels. [This does not seem to us to accord with the statement made to the Academy of Medicine on the 10th Feb. last, by M. Personne, that when chloral is added to fresh blood it completely coagulates the latter; and that the fear that such might occur is not without foundation, seems to be proved by a case related by M. Tillaux, which we shall presently notice.]

Prof. Oré further maintained that intravenous injections of chloral should be preferred to chloroform for surgical anæsthesia.

M. LE FORT strongly protested against this last assertion of Prof. Oré, and maintained that to practise surgical anæsthesia by the injection of chloral into the veins was to exhibit a profound contempt for human life. In so grave an affection as tetanus, when all other measures are powerless, an excuse may be found for bold experiments, but to employ intravenous injections of chloral to

simply produce anæsthesia was monstrous. In this sentiment MM. Verneuil, Duplay, and all the members of the Society expressed their concurrence.

M. TILLAUX communicated to the Surgical Society of Paris, May 6 (*L'Union Médicale*, May 23), a case of tetanus supervening on the opening of a cyst of the liver. The patient had difficulty in swallowing, followed by true trismus. He prescribed the administration of chloral in divided doses, but the swallowing of each dose excited tetanic convulsions, and the next morning on his visit, the patient appeared to be dying; was unable to swallow, and he determined to employ intravenous injections of chloral. This was immediately done, which at once revived the patient and produced the greatest improvement in his appearance. When M. Tillaux left the patient just previous to coming to the meeting, he entertained the strongest hopes of a successful result, and advanced the following conclusions:—

1. That chloral produces an immediate and marvellous effect in tetanus: 2d. That the method of administering it by intravenous injections does not present the dangers and difficulties with which it has been reproached.

At the next meeting of the Society (*Gaz. Hebdom.*, May 22) M. Tillaux stated that, notwithstanding the injection of 20 grammes of chloral at different times, the patient had died, and that the autopsy showed a coagulum extending through the whole extent of the right cephalic vein and the axillary vein as far as the subclavian vein. In the right auricle a white fibrous clot was found which must have been formed before death, and there was another clot in the left ventricle. The blood had a great tendency to coagulate.

M. Verneuil stated that an Italian surgeon had treated varices by the injection of chloral into the veins, with the hope of thus obtaining a coagulum.

M. Forget maintained that there was great danger in every new therapeutic treatment without first thoroughly studying the agent we employ. M. Tillaux's case was a case of experimental surgery. An agent which will succeed in an animal may not succeed in man, and especially a diseased man. A medicament known to produce coagulation of the blood ought not to be injected into the veins for the treatment of tetanus, for it will produce coagulation of the circulating blood.

35. *Tetanus Treated by Chloral Administered by the Mouth.*—M. CHAUVEL communicated to the Surgical Society of Paris (29th April), two cases of tetanus treated by chloral. One patient took 16 grammes of chloral each day and died at the end of the second day. The other took from the commencement of the disease the same dose every day and died on the third day. In neither case was the chloral of any benefit.

M. VERNEUIL communicated at the same time two cases treated by himself by the same remedy. The first patient took two days after the invasion of the disease 6 grammes of chloral which at once completely arrested the disease, the patient was cured after 25 days treatment. In the second, tetanus supervened ten days after a wound in the head which had almost cicatrized. Ten grammes of chloral were given daily, and the cure was completed in a month. M. V. remarked that it might be objected to his cases that they were chronic; that he thought probable, but he did not think it prudent to wait some days before commencing treatment in order to ascertain whether the progress of the disease was acute or chronic. It may be objected to the administration of chloral by the mouth that some patients cannot swallow. If after administering 15 grammes of chloral no benefit results, M. V. believes it is because the chloral is not pure, or that absorption does not take place from the digestive tube. Finally in some cases the attack is so violent that it is dangerous to wait two, three, or four hours for the effect of chloral administered by the mouth. Some other means of administration must then be sought for. Enemata have sometimes succeeded, but they have the inconvenience of requiring the patient to be moved and consequently tend to bring on the convulsions. Subcutaneous injections are not to be trusted though they may produce temporary relief, and in the treatment of tetanus a very concentrated solution is required, whence result local inflammations. It is easily to be understood then how injections into the veins should have been suggested. The

first to do this was M. Oré of Bourdeaux, but M. V. objects to M. Oré's suggestion of substituting intravenous for other modes of administering chloral. M. V. said he could not inject 10 or 12 grammes of chloral at once into the veins in case of tetanus without feeling great uneasiness, because we do not know in advance what dose may be required to relieve the spasms, and we do know that 2 grammes of chloral given by the mouth sometimes cures at once the affection. Finally, instead of curing tetanus at once, we must suppose that the patient may require to be kept under the influence of chloral for a month; are we then to have the vein exposed during all this time, or every day open a new vein? Trials of this kind should not be discouraged, but it is difficult to admit that the treatment of tetanus should commence by injections of chloral into the veins instead of giving it by the mouth.

In 1868, M. V. had not seen a case of tetanus cured; since that period he has employed chloral and cured 5 cases which give a proportion of $\frac{2}{3}$ cures.—*Gaz. Hebdomadaire de Méd. et de Chirurgie*, May 8, 1874.

36. *Transfusion*.—Remarks were made on this subject at the third meeting of the Congress of the German Society of Surgeons, by KÜSTER (Berlin), HASSE (Nordhausen), SANDER (Barmen), and BERNS (Holland). Küster pointed out that the effect of animal blood is not equivalent to that of human blood. He performed direct transfusion from artery to artery as proposed by Schliep in the *Berliner Klinische Wochenschrift*, No. 3, 1874, in thirteen cases from sheep, and in two cases from man. The operation was simple, and never interfered with by accidents, and the wounds healed without any disagreeable occurrence. The general symptoms after transfusion of human blood were rather agreeable to the patient, while after injection of a few ounces of animal blood there followed dyspnoea, cyanosis, pains in the back, and shivering, with rise of temperature. These symptoms, however, disappeared after a few hours; and in all cases he observed better appetite, greater cheerfulness and strength for a short time. All the cases were the subjects of anæmia and chronic diseases. Hasse described the mode of operating with two glass tubes and a piece of India-rubber tube, by connecting the artery of a lamb with the vein of the patient. He had observed good results in about thirty cases in which he had operated. Sander, of Barmen, operated after the method described by Hasse, but warned against the indiscriminate use of animal blood. He had a case where oliguria and uræmia followed the transfusion of lamb's blood in a patient with incipient consumption, who had not suffered before from disease of the kidneys. The symptoms of uræmia lasted four days. The patient survived; but, instead of being benefited by the transfusion, he was worse than before, and showed a considerable loss of weight a fortnight after the operation. Berns related a series of experiments on transfusion performed on dogs and rabbits, and their influence on fever.—*Brit. Med. Journ.*, May 9, 1874.

37. *Cirroid Aneurism treated by Injection of Perchloride of Iron; Death from Embolism*.—Notwithstanding the brilliant success which has attended the employment of coagulating injections by some surgeons, Mr. J. F. WEST regards them as dangerous especially when the tumours are situated about the face and head, and as evidence of this, he relates (*Lancet*, March 21) the following case:—

Alfred G. F., æt. 9 months, was admitted into Queen's Hospital, Birmingham, under his care, June 2, 1873, with a nævoid tumour, about the size of a small marble, on the right ala nasi, near the tip. It had existed from birth, but was slowly growing, and beginning to involve the left ala. It was soft and compressible, and over its surface large and distended capillaries were seen in three or four spots, each as large as a pea. Deformity from the prominent situation of the tumour necessitated operative interference, and as it was considered that no mode of operation offered so good an opportunity for the prevention of an ugly cicatrix as the injection of solution of perchloride of iron, it was decided to use it. At 11 A. M., chloroform having been given, three drops were injected by a hypodermic syringe into the lowest part of the tumour. The child struggled and cried, but there was no other unfavourable symptom. Three more

drops were then injected into the upper part of the tumour, and three at another highly vascular spot, when, on withdrawing the syringe, the child's face changed suddenly to a dusky hue, the hands and feet became blue, the pulse could not be felt, and the breathing seemed to be arrested; on raising the eyelids, the eyeballs were seen to be fixed and turned upwards and outwards, and the pupils were slightly dilated. The tongue was at once drawn forwards, and artificial respiration kept up for twenty minutes. During some part of this time the child breathed naturally, and then would cease to breathe until Silvester's method was again used. Until 6 o'clock the same evening he continued in a half-unconscious state, with a very feeble pulse, dilated pupils, livid hands and feet, and the angle of the mouth on the right side somewhat drawn down. About every ten or fifteen minutes he would start crying, and then relapse into his former semi-comatose state. During the evening the extremities became warmer and of a more natural colour, the breathing less laboured, and the pulse better; but the eyeballs rolled about, and the child could not be roused to take notice, and could hardly be induced to imbibe milk from his bottle. He continued in this state for three days, when he died, with well-marked symptoms of hemiplegia.

At the post-mortem examination, the membranes of the brain were found slightly congested; the anterior portion of both lobes of the cerebrum, and also the inner surface of the brain as seen in the walls of the lateral ventricles, were reduced to a soft pulp, while the posterior part of the brain substance was in a healthy state. A clot was seen stretching from the right internal carotid artery along the middle cerebral artery of the same side. The lungs were congested. The heart contained a small quantity of dark fluid blood. The liver, kidneys, and other viscera were normal.

That embolism was produced in this instance by the injection of the perchloride of iron does not admit of a doubt, and I therefore unhesitatingly confirm Mr. Thomas Smith's opinion that we are justified in rejecting it as a remedy for nævi on the face.

38. *Ligature of the Femoral Artery for the Cure of Elephantiasis Arabum.*—M. DUMARQUAY, on the 25th March last, exhibited to the Surgical Society of Paris, a woman aged 38, whose left femoral artery had been ligated in 1864 by M. Adolphe Richard for elephantiasis arabum of the left lower limb; the limb subsequently nearly regained its natural size, the skin became supple, and the case was published in the *Gaz. des Hôpitaux* as cured. Subsequently the patient lost the benefit of the operation, and the limb regained its former enormous size. It is thus evident that the announcement of the success of the operation was premature.—*L'Union Médicale*, April 7, 1874. This case affords another proof of the correctness of Prof. Fayrer's opinion that the operation is productive of only temporary benefit.

39. *Elephantiasis Græcorum.*—Dr. LEISINK relates a case of this kind in the *Deutsche Zeit.*, vol. iv., in which he tied the femoral artery just below Poupart's ligament. The lady, fifty-one years old, had suffered twenty-five years before from repeated attacks of erysipelas in the right leg, and the latter measured twenty inches round the calf, whilst the sound leg measured only seven. She was considerably weakened by oozing of serum, and four days after the operation the size was reduced to twelve inches. It rose a little afterwards, and although the patient was not actually cured, the disease was certainly arrested and modified. Compression of the artery has been tried in this and other countries with varying success, but amputation has almost always proved fatal.—*Lancet*, April 25, 1874.

40. *Strangulated Hernia Successfully Treated by Inversion.*—Our No. for April last contains an article by Dr. LEASURE, on the tractile method of reducing strangulated hernia. In the *Indian Med. Gaz.*, for the same month, Dr. THORNTON records a case of oblique inguinal hernia successfully treated by that plan. The rupture had appeared 26 hours before admission into the Arrah Dispensary, and the patient and his friends had made many attempts to return

the protruded bowel, but without success. Severe pain in the part came on during the night, and finding him getting worse his friends brought him to the dispensary early in the morning. The Sub-Assistant Surgeon then attempted to reduce the rupture by means of the taxis with the assistance of chloroform, but he was unsuccessful. Dr. Thornton saw the patient at 9 A.M. He was in great pain and distress, there had been no action of the bowels since the hernia appeared, and hiccup and vomiting had already set in. Dr. T. ordered the foot of his bed to be raised and supported at an angle of 45° , and directed that he should be allowed to remain in that posture, and that no further attempts to return the rupture should be made. The result was that in about twenty minutes the hernia disappeared, reduction having taken place spontaneously.

41. *Volvulus Treated by (Extra-Peritoneal) Abdominal Section; Breaking Down a False Ligament by Manipulation; Recovery.*—Dr. FREDERICK BETZ reports an interesting case of this, and strongly insists upon the importance of a careful examination of the abdomen by percussion and palpation, as soon as we are called to a case of intestinal obstruction. When this is done at an early date, we can generally learn the most tender spot, and the starting-point of the symptoms of obstruction. This information is of great value, not for mere diagnostic purposes, but as a guide, should we subsequently determine upon operation. If called too late, or if we defer this examination too long, it is very difficult, if not impossible, to determine either the site or the kind of the obstruction with which we have to deal, or to feel justified in recommending an operation. Of late, very great progress has been made in the differential diagnosis of cases of internal obstruction of the bowels; and it is to be hoped that abdominal section will be done more frequently, and at earlier periods than heretofore. The following history affords material for more hopeful prognosis in such cases.

A woman, aged thirty-five, had suffered for some years from femoral hernia of the right side. When she was three months pregnant the rupture became incarcerated, but was reduced without any very great difficulty. During the remainder of gestation it gave her no further trouble, and was not even visible. A month after delivery (the night of July 17-18, 1870) she was seized with violent abdominal pains and eructations. Flatus and fæces no longer passed by the bowels. On the 19th Dr. Betz saw her, and found the right hypogastric region tense, convex, distended, and very tender to touch. The left side of the belly was somewhat sunken in, and not at all tender. Fæcal vomiting had set in. The other symptoms remained as before. Over the swelling the percussion-note was dull; elsewhere normal. The pains extended to the loins, and were remittent. There was no external sign of the old hernia. Digital explorations of the crural canal gave great pain. Three possibilities presented themselves; viz. perityphlitis, internal obstruction (from a twist in the bowel), or strangulation in the crural canal. The globular form and board-like hardness of the swelling were against perityphlitis, whilst all the symptoms favoured ileus. The former history and the local tenderness rendered it probable that there was a Littré's hernia, but this tenderness was afterwards found to be only part of the general sensitiveness to pressure. Morphia was given in half-grain doses every six hours. Cold compresses were applied, and water and ice given freely, but purgatives were religiously avoided. Next day (July 20) she was worse; there was less tenderness, but no improvement in either the local or the general symptoms. Pulse 100. Her countenance was anxious. The ileus had now lasted three whole days. Dr. Betz could see no other means of doing good, except abdominal section, with the view either of breaking down a false ligament (band), or of relieving the possible strangulation in the crural canal by withdrawing the coil of intestine from within. After giving chloroform, he made an incision two inches long through the skin, over the crural canal, in a line between the anterior superior spinous process of the ilium and the spine of the os pubis. The fat and fasciæ were divided partly by forceps and knife, partly pushed aside by the fingers. The external crural ring was found to be quite clear. The abdominal wall was then divided down to the peritoneum. Before opening this, he tested the resistance and mobility of the coils of intes-

tine, using a little gentle force. The patient and himself were conscious of a very evident crack or snap, as if some fibres had given way. He was now convinced that the volvulus was produced by a false ligament, situated in the pelvis (horizontal ramus of the pubic bone), and, since one end had given way, it was now possible for the bowel to untwist, and for its patency to be restored. The peritoneum was therefore not opened, but the wound was closed with a compress, and the cold applications were continued. Shortly after the operation, both pains and vomiting ceased. On the 21st, the swelling in the right side was still perceptible, but less tense. Her general condition was improving; she had no thirst. Pulse 80. No fæces or flatus passed. Clysters of Glauber's salt, and milk and water diet were ordered. On the 22d, flatus and a fairly copious, thin, offensive evacuation passed. The tumour was still perceptible, but less tender, flatter, and less elastic. The wound was already more than half healed by the first intention. Her general condition was good. Pulse 80. The clyster was repeated. On the 23d, the bowels acted pretty freely. On August 15 the wound had healed nicely. Further treatment was simply precautionary, as to diet and regimen. On August 31 she still had slight pain when she lay on her left side. She felt a kind of ball in the original spot; and there was frequent gurgling there, as of gas passing through narrow into wider portions of bowel. Deep pressure in the right hypogastric region gave rise to resistance, and one spot was still tender.

It can scarcely be doubted that, after the breaking down of the false ligament, time was still necessary for the untwisting and gradual restoration to health of the agglutinated and convoluted intestines. Hence the subsequent symptoms. Now that three and a half years have elapsed, she is free from all distress, and has no sign of any hernia. The firm cicatrix, adherent to the abdominal muscles, fulfils the functions of a truss. Dr. Betz modestly attributes this successful result to improved methods of diagnosis and recent additions to our knowledge of the etiology of such cases; and remarks that if "delays are dangerous" in external herniæ, they are still more so in internal obstructions. — *Lond. Med. Record*, March 25, from *Betz's Memorabilien*, vol. xviii. p. 493.

42. *Extirpation of Kidney*.—Dr. G. SIMON reports (*Centralblatt für die Med. Wissenschaften*, March 28, 1874, from *Arch. f. Klin. Chir.* xvi. 48-57) the case of a woman, aged 30 years, who suffered for 18 years from dull pain in the region of the kidney accompanied with purulent and rapidly decomposing urine. Later there was associated therewith from year to year violent attacks of renal colic, which finally became fearfully intense, and continued from 36 to 48 hours. At the same time her constitution began to fail. At times she evacuated with her urine, gravel and grains of phosphate of lime. The patient suffered such tortures that she came over from America to obtain relief by operation. The diagnosis was established. The constant appearance of the pain in the left side and the sensibility of the kidney on pressure, pointed to a local cause for the suffering. Furthermore, the abnormal urine would become during the attack normal, which was to be explained by a stoppage of the left ureter. Prof. Simon also believed that occlusion was excluded, since at no time were there symptoms of the formation of an abscess present. The operation was performed in the way previously described by the author, through the lumbar incision. After laying bare the organ no stone could be detected by palpation, notwithstanding it filled up the entire pelvis of the kidney. The progress of the case was very favourable up to the 21st day; then septicæmic symptoms set in, to which general peritonitis and pleurisy were added, and the patient died on the 31st day. On post-mortem examination the right kidney was found to be enlarged nearly twofold; the left ureter had healed in the cicatrix, and the wound had almost entirely cicatrized. The cause of death must be attributed to septicæmic infection.

Dr. BRANDT, Professor of Surgery in Klausenburg, relates, in the *Wiener Med. Woch.* for Nov. 29 and Dec. 6, an interesting case of the successful extirpation of a kidney after an accidental injury.

S. P., a healthy peasant, aged 25, was, on June 3, 1872, stabbed by a drunken man in the left hypochondrium by means of a pointed table-knife. Three or

four ounces of blood were lost; and after a while attacks of cough came on, which were attended by a protrusion of a fleshy swelling through the narrow orifice of the wound. Twenty-four hours afterwards he was brought to the hospital, when scarcely any signs of anæmia were observable. Exactly opposite the lower edge of the last false rib there was found a flattish fleshy tumour, of a reddish colour, measuring nine centimetres in length and six in breadth, and from which constantly trickled a transparent, straw-coloured fluid. The edges of the tumour were irregular, as if gnawn, and its under surface was covered by a smooth membrane, in part of a dark-red and in part of a whitish colour. From the middle of this lower surface, a pedicle, six centimetres in circumference, extended into the wound of the abdomen, giving the tumour the appearance of a mushroom. This pedicle was surrounded also by a smooth membrane, which was torn in several places whence escaped some of the above-mentioned fluid. It was firm to the touch, evidently containing vessels, which, however, conveyed no pulsation. The oblique wound in the hypochondrium through which this pedicle passed was about three centimetres in length and one and a half in breadth, having sharp edges, with which it embraced the pedicle. To the touch the tumour was moderately firm and painless (pain only being produced by traction on the pedicle), and its temperature at the surface was lower than that of the rest of the body. The tumour upon the whole much resembled the section made on examining a kidney, and under the microscope the shades of colour characterizing the cortical and pyramidal substances were made out. The abdomen in the vicinity of the wound was quite normal in appearance, but in the left lumbar region there was a remarkable oval-shaped sinking-in. The tumour was very movable on its pedicle when rotated, and this last admitted of some elongation, which, however, produced great pain in the pedicle and the abdomen, but not in the tumour itself. The general condition of the patient was unexpectedly good, the pulse being twenty-four hours after the accident about 80, and the temperature 37.8° C.

The appearance of the tumour and the analysis of the urine which trickled away (which is given in some detail) showed plainly that it was the kidney that had suffered an injury. The organ had evidently been cloven to within its calyces; but what amount of injury the ureter and the vessels had undergone could not be ascertained. It could hardly have been supposed that a knife could have been driven through the abdomen right into the kidney without injury being done to the peritoneum; but the absence of all symptoms proved that such had been the case. After considering at some length the various probabilities of the course the case would take if the kidney were allowed to remain where it was, and of the effects which its removal might exercise on the economy, Prof. Brandt proceeded to its extirpation four days after the injury. The patient, indeed, continued in a very favourable state for the operation, having the day before its performance walked some distance in order to be photographed, occupying two hours in assuming the necessary positions. For the three days prior he had passed little urine, and this contained albumen, derived at all events in part from the injured kidney, which at its injured surface furnished it abundantly. On the day of the operation the pulse was 70, and the temperature 37.6° . The purulent secretion from the injured kidney had considerably increased. A double silken ligature was passed by means of a straight needle through the middle of the pedicle, which was tied in two portions, the kidney itself being separated by means of the knife. No hemorrhage followed. A daily report of the condition of the patient and the quantity of urine secreted is given from June 7 to 22. From this it results that considerably more than half of the urine usually secreted by the two kidneys was furnished at all times by the single one, and on some occasions this amounted to the entire normal quantity. In the whole course of the case no symptoms of an uræmic or peritonitic character occurred. The patient has been frequently seen since his discharge, and continues well.—*Med. Times and Gaz.*, January 24, 1874.

There have been recorded eleven cases of extirpation of the kidney, of which eight died, and three recovered.

The notes of eight of the cases are to be found in the No. of this Journal

for January, 1873, page 277, which, with the one noted below, we have the excellent authority of Surgeon Otis (*Medical and Surgical History of the War of the Rebellion*, Surgical Volume, 2d Part) for saying constitute all the reported cases up to the date of his writing (1873).

Dr. CHAS. L. STODDARD, of East Troy, Wis., reports (*Med. and Surg. Reporter*, 1861, vol. vii. p. 126) the case of a man, aged 58 years, from whom the kidney was extirpated on account of encephaloid disease, the operation having been undertaken in the belief that the mass was a cystic tumour of the liver, and its true nature was not discovered until after the operation was performed. The patient survived fifteen days, and died from exhaustion believed to be due to the extensive suppuration which followed the operation.

43. *Billroth's Case of Extirpation of the Larynx and Epiglottis; Artificial Vocal Diseases.*—In our preceding number, p. 556, we gave an account of this remarkable operation, and now add a report of the subsequent history of the case as communicated to the *Irish Hospital Gazette* (May 1), by Dr. CARL SCHWAIGHOFER.

The wound healed rapidly, and what after the operation was four inches long, had soon contracted so much as to necessitate the use of the knife to allow of the insertion of a medium-sized canula. In like manner the cavity formed by the removal of the larynx contracted so much that its sides were only kept from contact by the apparatus which was inserted. The effect of the contraction of the cicatrix on the trachea was to draw it powerfully upwards, and thus the wound made in the œsophagus by the operation was considerably lessened. The apparatus invented by Billroth's assistant, Dr. Gussenbauer, consisted of three parts—1. An ordinary Trendelenburg's canula, of large calibre and good length, and having a large oval aperture at the point of greatest convexity. This canula was inserted into the trachea, and fastened in its place in the usual way. 2. A second canula with the same curvature, and just so much smaller as to fit accurately within the first. This also had a large corresponding oval opening. This canula was inserted into the former, but in a contrary direction; that is to say, its inner end, instead of pointing, as that of the first did, towards the trachea, pointed towards the pharynx. In these positions the two oval openings corresponded, and the passage for the air from the trachea to the mouth was free, and the patient could, by closing the opening, breathe through his mouth. That part of the apparatus which was intended to produce the voice, consisted of a short, straight canula, open at one end, closed at the other. In its walls, and exactly opposite each other, were two openings. Further, it was divided down the centre by a partition, in which was inserted the metal tongue which, by its vibrations, produced the voice sounds. This latter canula was inserted into the second, and fixed by means of a sliding-ring. When the three canulæ were in position the openings corresponded; and when the patient closed the outer opening the air was compelled to pass through the third canula, and in so doing to cause the metal tongue to vibrate and thus produce sounds. The patient is, however, able to inspire through the lower opening without causing the metal tongue to vibrate sufficiently to produce a sound. By means of this apparatus the patient can make himself understood in a large room, although, as would be expected, the tone of his voice, though not to say unpleasant, is rather monotonous. He has no difficulty in taking solid food, and it is only when he tries to swallow fluids rapidly, that a drop sometimes falls into the canula; which is, however, easily again cleared by the patient coughing. The man has recovered his former healthy and robust appearance, and as no attempt has been made at the formation of further new growth up to the beginning of March, the man was then discharged from the Hospital, and has returned to his former occupation a living and happy triumph of modern surgery, and, more especially, of the skill and daring of Professor Billroth.

44. *Resections of the knee.*—According to M. CHERRU the following are the statistics of all the resections of the knee in the French Army during the Franco-Prussian war, and the war of the Commune (1870, 1871). Of 65

partial resections of the knee involving only the condyles of the femur, there were 62 deaths. Of 37 complete resections, involving both femur and tibia, there were 33 deaths and 4 cures. The resection of the knee then was followed by less favourable results than amputation of the lower part of the femur.

M. PENIÈRE states in his thesis that of 20 resections of the knee there were 17 deaths; but 4 resections made in Paris during the siege must be added. According to M. Le Fort, of these last four cases three were cured.—*Gazette Hebdom.*, April 17, 1874.

45. *Tibio-Calcanean Osteo-Plastic Operation.*—M. J. LE FORT describes the following operation as an improvement of Pirogoff's osteo-plastic method. He commences the incision 2 centimètres (.8 inch) below the malleolus externus, and directs it forwards to the middle third of the os calcis. On arriving at this point, the knife describes a curve whose anterior convexity corresponds with the astragalo-scaphoid articulation; as soon as the internal ligaments of the foot are reached, the knife is directed backwards, and stopped at a point 3 centimètres (1.2 inch) in front of the inner malleolus. Then lifting up the foot, he fashions a plantar flap equally convex with the dorsal, passing transversely under the sole of the foot, and meeting the external incision below the outer malleolus. Next, the dorsal flap is dissected up, in order to find the tibio-dorsal articulation, and great care is taken in isolating the flap so as not to wound the posterior tibial vessels. Dividing the ligaments attaching the foot to the fibula, the point of the knife is thrust between the os calcis and the astragalus, as in the subastragaloid amputation, and the interosseous ligaments are divided. The foot is then separated and dislocated inwards, and the posterior flap fashioned as in Chopart's amputation. In order to disengage the astragalus, it is seized with a strong pair of forceps, and all attachments to the leg are divided. It only remains then to saw the os calcis from behind forward, from which the whole superior articular surface is removed, in such a way as to extend forward close to the articulating surface with the cuboid. Afterwards, all the soft parts being isolated, the articular surface of the tibia and fibula are sawn off, and the cut surfaces of the bones placed in apposition. M. Le Fort maintains that by this method he obtains a firm and perfect basis of support, without the grave inconveniences attending Pirogoff's method.—*Lond. Med. Rec.*, March 25th, from *Gazette Hebdomadaire*, Nov. 7, 1873.

46. *Fractures of the Skull with Reference to Operative Interference.*—Dr. CORLEY, Surgeon to Jervis Street Hospital, relates (*Dublin Journ. Med. Sci.*, April, 1874) five cases of fractures of the skull to illustrate the statement of Mr. J. Hutchinson that depression of bone is rarely the cause of symptoms of compression, and defines the cases in which he considers trephining should be avoided and when necessary.

1. *Simple fissure.*—For this fracture the operation should never be performed. True, that accompanying the injury there *might* be localized extravasation of blood; or, subsequent to and consequent on it, there might be formation of matter, which may require the application of the trephine, but the operation then has no reference to the fracture.

2. *Simple comminuted fracture.*—A fracture may be simple externally, but the inner table may be more extensively fractured, and fragments may wound the dura mater or brain. This condition cannot be guessed at until symptoms of intra-cranial mischief arise—for them, and not for the fracture, we may trephine.

3. *Depressed fracture.*—I do not make any distinction between simple depressed and compound fracture as to operative treatment. The latter is more liable to be followed by intra-cranial mischief. As long as no symptoms are present, or *if present, until we have tried all other means of removing them*, we should not operate. If obliged to interfere we do so with little hope, as the symptoms are most likely to own an origin other than the depressed bone.

4. *Depressed fracture comminuted*—including that which is known as "punctured" fracture, such as may be produced by the stab of a pointed weapon, kick

of a horse, or blow of a sharp stone.—In many cases of this description it may be necessary to operate at once, *whether symptoms be present or not*. If the surgeon has reason to believe that in a punctured fracture spiculæ of bone are impinging on the surface of the brain and lacerating it, he is bound to interfere at once. The cause, nature, and position of the injury, and the peculiarities of the symptoms, if any be present, will be all of value in assisting him to arrive at a correct determination. However, in this case—the only one in which I would sanction interference without symptoms—much must be left to the experience and judgment of the surgeon. With reference to this particular point, I shall draw attention to the remarkable cases reported by my colleagues, Drs. J. Stannus Hughes¹ and Meldon,² and it will be confessed that they more than justify the latter part of Liston's aphorism—"that scarcely any injury of the head is too grave to be despaired of."

47. *Treatment of Cystic and Fibro-cystic Bronchocele*.—Dr. MORELL MACKENZIE read a paper on this subject before the Clinical Society of London (April 25, 1874). At the end of 1873, Dr. M. had treated 68 cases of cystic goitre, and 19 of the fibro-cystic variety. Of the cystic cases, 54 were cured, 11 were too slight to require treatment, and in 3 instances cardiac disease rendered it undesirable to employ radical treatment. Of the fibro-cystic cases, 11 were cured, 4 greatly benefited, and 1 died, whilst in 3 cases, the disease, being slight, did not call for interference; and 1 patient discontinued attendance during the treatment. In the cystic cases, the cyst was first emptied with a trocar at its most dependent part. A drachm or two (according to the size of the cyst) of a solution of perchloride of iron was then injected and the canula plugged, the iron being left in the cyst; after seventy-two hours, the plug was removed, and the iron solution withdrawn. The plug was then reinserted, and poultices of linseed meal kept constantly applied for a few days (sometimes for ten days or a fortnight) immediately over the cyst. In a few days, suppuration was set up, and the plug was then permanently removed, the canula, however, being allowed to remain in the cyst until the secretion was limited in amount and thin in consistence. The duration of treatment was generally from three weeks to four months, according to the size of the cyst, the usual time being from six to eight weeks; if, however, the first injection were removed too soon, the process might have to be repeated two or three times, and thus the duration of the cure would be prolonged. In the fibro-cystic cases, the cysts were first treated in the manner described, and the fibrous structure afterwards attacked with subcutaneous injections of iodine. In the only fatal case—one of fibro-cystic substernal goitre—death suddenly supervened from the injection of air into a vein. In order to avoid such an accident in future, the author now uses a syringe with a long bent nozzle, which is so constructed that it cannot be completely emptied during the injection. With this precaution, he believes that the risk is entirely removed. Several cases were related in detail, and the following were the conclusions at which the author had arrived: 1. Any cystic goitre which has attained the size of a hen's egg requires to be actively treated, even when the symptoms are not urgent; 2. Smaller cysts, which give rise to serious dyspnœa or dysphagia, likewise require to be treated; 3. The conversion of the cyst into a chronic abscess is the safest and most certain mode of treatment; 4. Suppuration is best set up by injections of the perchloride of iron, as the disposition to hemorrhage is thereby effectually controlled; 5. Injections of iodine (in cystic goitre) are dangerous, because often followed by sloughing; 6. There is a risk in the treatment by injections of iron, from the occurrence of too profuse suppuration when the cyst has been allowed to attain too large a size before treatment; 7. All operations on the neck are attended with the danger of air entering a vein and causing sudden death; 8. This risk is in proportion to the development of the veins, and the propinquity of the tumour to the heart; 9. In pure cystic goitre, the chance of this occurrence is so slight that it may be dismissed from consideration; 10. In certain kinds of fibro-cystic goitre, viz., those in which some

¹ Irish Hospital Gazette, No. 193.² Dublin Medical Journal, No. 4, 1872.

of the original gland substance is contained in the cyst, especially in substernal fibro-cystic goitre, the risk is at its maximum; 11. The extirpation of cysts is always attended with great danger from hemorrhage; 12. Extirpation is, nevertheless, justifiable where (the symptoms being urgent) the cyst has attained an enormous size, and has a capacity of several pints, but is not directly connected with the trachea or oesophagus; 13. Extirpation is justifiable where such a cyst has already burst and the patient is in danger from an exhausting discharge. 14. Extirpation may also be employed for the removal of a small but distinctly pedunculated cyst, having, for instance, a capacity of two or three ounces, provided there be no large vessels in its peduncle.—*Brit. Med. Journ.*, May 16, 1874.

48. *The Contra-indications to the Removal of Melanotic Tumours, derived from the Examination of the Blood and the Urine.*—It is important to know before extirpating a melanotic tumour whether the viscera have also become the seat of the morbid growth or not; and M. NEPVEU (*Gazette Médicale*, No. 5, 1874, p. 59) has lately shown that this point can be settled with almost absolute certainty by examining the blood and urine of the patient microscopically. The white corpuscles are found, in cases of visceral implication, to be increased in number, so that with Hartnack (ocular iii., objective 7), fifteen, twenty, or even forty are visible in one field, and they contain, in addition, fine blackish granules of pigment. The serum shows small brownish-red granules, and also flexible granular casts without consistence, and analogous in form to those occurring in the urine in Bright's disease. These, M. Nepveu considers, are moulds of capillaries. The red corpuscles seen *en masse* may have a more or less distinctly pronounced sepia tint.

The urine is darker in colour than ordinary, and assumes a blackish hue if nitric acid or bichromate of potash be added to it. Under the microscope cylindrical masses are seen in the deposit, or else irregular accumulations of brown granulations, like the hyaline casts of Bright's disease in form. If the urine be allowed to evaporate in the air, clumps of fine grayish granules become visible, which surround crystals of various shapes, all of which have a dark hue.

As examples of the application of these facts to diagnosis, M. Nepveu relates two cases. The first was that of a man of thirty, from whose thigh a pigment mark had been removed because it had become irritated by the friction of his trousers. A few months afterwards the glands in the groin enlarged, and an incision was made into them, under the impression that there was suppuration; but instead of that a fungoid growth appeared, which rapidly increased in size, and extended up into the iliac fossa. The blood and urine were examined a little while before the patient's death, and found to have the characters previously described. At the necropsy, metastatic nodules of melanotic sarcoma, resembling the primary tumour, were found in the liver and lungs, in the bones of the cranium and sternum, and in some of the lower ribs. There was not a single nodule in the kidneys, but the whole organs had a slight sepia tint, with one or two pigment spots scattered here and there; so that melanuria does not point necessarily to implication of the kidneys themselves, but only to the presence of a great amount of pigment in the blood, and so to its generation in the other viscera. In a second case one melanotic tumour was removed from a man of fifty-one in December, 1871. In 1872 he had a relapse, and he died in November, 1873. His liver, spleen, kidneys, and osseous system were the seat of secondary deposits, and the diagnostic signs of visceral affection were previously found in the blood and urine.—*Med. Times and Gaz.*, March 28, 1874.

49. *Extirpation of the Spleen.*—Dr. WATSON showed, at a meeting of the Medico-Chirurgical Society of Edinburgh (*Edin. Med. and Surg. Journ.*, Feb. 1874), a spleen "weighing nearly 12 lbs., which, on the 1st November, 1873, he had removed by gastrotomy from a man who had noticed the tumour for more than two years. It filled a great part of the abdomen, displacing the organs. The patient was reduced to a most anæmic condition, and pressed the performance of the operation. The pedicle of the tumour was transfixed by a strong double ligature and tied in two halves. The vasa brevia from the stomach gave much trouble in securing them."

OPHTHALMOLOGY.

50. *Derangements of Vision and their Relation to Migraine.*—Dr. T. CLIFFORD ALLBUTT, in an interesting review (*Brit. and For. Med.-Chir. Rev.*, April, 1874) of Dr. Liveing's work on migraine and some allied disorders, says: "I remember being much disconcerted by the occurrence of hemiopia in my own person about fifteen years ago. I was then scarcely aware of its relation to migraine, and feared some serious bodily calamity. On inquiry I came across the proper history of the symptoms, and have disregarded my few subsequent attacks. My father had migraine severely up to middle life, but myself am and have been wholly free from any form of headache. Take vomiting again. How many of us are acquainted with nervous patients who have periodical attacks of vomiting, which own no obvious cause; are not these very probably to be referred to partial migraine? So much for the limits of variation on the side of partial or milder phenomena, but to know what these limits are in the direction of severity is even more important. Take the following: A gentleman was seized suddenly, first with blindness, of which he complained, then in a few minutes he became aphasic, in a few minutes more he was hemiplegic of the right arm and leg, and perhaps slightly unconscious for a brief interval. Then he vomited freely, and when I saw him had practically recovered. After an anxious consultation his medical attendant and myself ventured to hope that the attack might belong to the migrainous species, though there was no headache. We based this on the rapid recovery, on his well-marked neurotic habit, and on the history of overwork and anxiety. We were probably right; the attacks have recurred some dozens of times in the last five years, and in varying degrees, but have been much reduced in frequency and severity by appropriate medical and other treatment.

"Again, before I left home for my holiday in the summer of 1873, I was most urgently called, with one of my colleagues, to see a lady, about forty years of age, under the following circumstances. She has been subject to migraine for many years. On a Saturday she had complained, as usual, of a bad 'bilious attack.' This lasted during the Sunday, when she was very sick, but she was able to walk from one room to another and give a few orders to a servant. On the Sunday evening, however, when her husband and family expected her to recover as usual, she gradually became lethargic. When I saw her on the Monday she could only be roused with great difficulty, and this to a very small extent. She could not or would not put out her tongue; she was completely paralyzed on the right side, and her eyes presented a conjugate deviation to the left. On the Tuesday she was much the same, save that she showed some signs of returning consciousness, and my colleague and myself were constrained to give the opinion that the case was one of encephalic hemorrhage. On the Thursday I met her husband by chance, and he said she seemed better, but we had a long talk about her apparently sad prospect. She was a lady of great accomplishments, and her right hand was almost her life to her, but I begged her husband to let things alone, and to avoid any active interference, such as faradism, until he had full leave from his advisers. I then left for a month. On my return one of the first patients who walked into my consulting room was Mrs. —, who entered briskly, smiling and holding out her right hand, which I shook warmly. It was perfectly restored, and she was not only quite well, but very soon after her attack she was using her fingers for the finest art work. A few days then had completed her recovery from a state which certainly seemed desperate, a state, however, which immediately followed a distinct attack of migraine. She had not only been subject to migraine for many years, but twice or thrice in her adult life she had been suddenly struck with aphasia, which, although rather severe at the time, had passed away in a few hours or less. These two cases, and some others of less severity which I have seen, would seem to associate migraine with loss of controlling power in the anterior part of the left hemisphere (*vide Liveing*, p. 96). If subsequent inquiries can prove to us that migraine can put on so grave a form as we have hinted, we cannot make these facts too widely known (*vide Liveing*, p. 221).

51. *Transitory Embolism of the Central Artery of the Retina.*—Dr. L. MAUTHNER refers to a number of cases in which sudden blindness has occurred, but after a time has been as suddenly recovered from. Sometimes these cases ultimately result in permanent and total blindness. The suddenness of the blindness certainly suggests embolism; but it seems difficult under this view to account for the perfect and sudden recovery. The author had the good fortune to examine a case during the period of blindness. A man suddenly had partial loss of vision, which soon became complete. On ophthalmoscopic examination there was perfect anæmia of the retinal arteries, evidently the result of embolism. But in a few minutes the blindness disappeared, and the vessels were found to have returned to the normal condition. This result was evidently not due to the embolus which had obstructed the vessel breaking up, and its fragments being carried into the branches of the artery, because such a condition would be readily enough detected. A very probable explanation is suggested by the author. He reminds us that the central artery of the retina is a branch of the ophthalmic, and that probably in these cases the embolism has stuck just at the off-giving of the branch, this being in accordance with the general fact that emboli usually stick fast at the point of bifurcation of an artery. In such case the obstructing shred would project in part into the ophthalmic and in part into the central artery, obstructing the latter, but probably only partially filling the former. Now the current of blood in the ophthalmic might readily enough wash away the embolus, and the portion of it in the central artery might be drawn out and carried off. The ophthalmic artery is distributed to the skin, and a small embolus in it would not produce very distinct symptoms.—*Glasgow Med. Journ.*, April, 1874, from *Stricker's Medizin. Jahrbücher*, No. 11, 1873.

[We may here refer to the interesting article by Dr. Loring on Embolism in our number for April last, in which he shows that there is reason to doubt whether some cases of sudden blindness ascribed to embolism are really produced by that cause.]

52. *Treatment of Cataract previously to Operation.*—Mr. CRITCHETT regards it as the duty of the surgeon to warn his patients of the nature of the disease when it has but barely commenced, and when a long and anxious time must elapse before any operation can be attempted. Mr. Critchett, even at the risk of appearing to overlook the true nature of the case, would be reticent, knowing how the thought of impending blindness from cataract is dreaded.

Another question which has to be met is, whether there is any cure, any means of removal by medicine or otherwise, short of an operation. It is at this time that patients with cataracts are apt to fall into the power of quacks and charlatans. Though the answer to this question must be a decided negative, yet there is much that may be done to relieve the present discomfort; for instance, the amount of light may be regulated by the employment of proper glasses, and by the continued use of atropia in solution. It will be well too that the patient should be seen at regular intervals, in case the commencing cataract may be the precursor of some more serious condition, such as glaucoma; and by degrees the knowledge that the increasing dimness of vision is due to cataract and to nothing worse, may in itself be a reason for looking hopefully to the future.

The time for operative interference has arrived when—

1. The cataract is completely matured;
2. The lens of the second eye is also so opaque that the patient is on the point of having to relinquish his occupation.

The social position of the patient must be borne in mind; but the second condition is to be insisted upon, because surgeons of the old school used to delay till blindness was complete, and there is a tendency amongst some surgeons of the present day to adopt the other extreme and to attack every single cataract at once.

There are some cases of cataract which will, Mr. Critchett thinks, always give rise to difference of opinion, and which indeed are embarrassing; viz., when there is very great impairment of vision while the cataract is yet far from

maturity. Is the surgeon to operate upon an immature lens? or is he to hasten the maturity by some operation? The latter course Mr. Critchett believes to be full of danger; and, except in cases where the cortical layers of the lens are much involved, it is, he thinks, the duty of the surgeon and in the patient's interest to wait. In the case where one is cataractous and the other quite sound, Mr. Critchett thinks that in young subjects it is well to operate, but in elderly patients, while one eye retains its perfect power, the cataract in the other should not be interfered with.—*London Med. Record*, May 20, 1874, from *Annales d'Oculistique*, Sept. and Oct. 1873.

53. *Prolapse of the Vitreous Humour*.—Mr. PIERMÉ in a recent work gives the results of his studies relative to the anatomical changes which take place immediately after the loss of vitreous humour and on the question of its redevelopment, by the light of experiments on animals as well as from its clinical and surgical aspect, and his results are embodied in four chapters. The first chapter is devoted to the normal anatomy of the vitreous humour. The second gives an account of his experiments performed upon rabbits. The third is devoted to clinical observation; and, in the fourth, are summed up the conclusions derived from the preceding three.

The results of the experiments made upon the eyes of rabbits showed that, when a small quantity of the vitreous humour had been removed by means of a small syringe, the operation was a very simple one, and was attended by no evil consequences, no hemorrhage, nor any inflammation of the coats of the eye. Thirteen such experiments are recorded, and in all, the eye, which was soft and somewhat shrunken after the operation, in a few hours had regained its normal tension and appearance. The author asks whether, in these cases, the vitreous humour reproduced is identically the same, or, merely a new substance, more or less resembling that which had been lost; and he feels inclined to admit the reproduction of a veritable vitreous humour, and for the reason that the fluid removed from the vitreous chamber is the structureless and albuminous fluid which is again speedily reproduced from the surrounding bloodvessels. M. Pierné even admits a renewal to a certain amount of the nucleated cells described by Iwanoff. Surgical experience shows that a man may lose vitreous humour in consequence of a wound of the sclerotic, and in a short time the eye may regain its normal appearance and may retain its sight; and it has been the experience at some time or other of most surgeons, that on the day following a cataract operation, during which vitreous humour has been lost, the tension of the eye has been completely restored. It is, however, probable, that such eyes are never so sound or so well able to withstand disease, as those which have passed through the operation without accident. The case is far otherwise, however, when the loss of vitreous humour has been considerable; there is then the risk of choroidal or retinal hemorrhage with detachment of the retina perhaps, or, in the instance of a cataract extraction, the fragments of the cortical substance which are retained in the eye may become the exciting cause of proliferative changes, and take the shape of suppuration, or of membranous opacities which must prevent useful vision.

The conclusions arrived at by M. Pierné are as follows:—

1. The vitreous humour is reformed readily and speedily both in the eyes of man and of the lower animals.
2. Prolapse of the vitreous humour is of greater danger when the wound is large, and naturally the gravity of the accident is greater in proportion to the amount of the loss.
3. The vitreous humour may become the seat of an inflammation in consequence of a wound, and this inflammation may terminate by resolution, by suppuration, or may become chronic.
4. The immediate evil consequences of prolapse, generally have their origin in the choroid; and the ultimate result is atrophy of the eyeball.—*London Med. Record*, May 20, 1874.

54. *Foreign Bodies lodged within the Eye*.—Mr. C. S. JEAFFRESON, Surgeon to the Eye Infirmary, Newcastle-on-Tyne, makes (*Med. Times and Gaz.*,

March 28, 1874) some judicious remarks on this class of accidents. "There is one rule in ophthalmic surgery," he says, "which will help us to deal with a large class of these cases, and it is this: *That an eye which has been damaged by accident or disease, and which is no longer useful for visual purposes, is a dangerous organ, and should be removed.* I do not wish to assert that this rule should always be rigidly carried out as regards eyes which have been destroyed by idiopathic disease, although I think, in these cases, a rigid conformity to it would rarely carry us astray. In traumatic cases I firmly believe that it can never safely be departed from, and should be carried out as soon as we have convinced ourselves that the visual power is gone, or will be so low as to be practically useless. Scarcely a day passes in my public and private practice without my seeing a case of sympathetic ophthalmia, which might have been averted had this rule been thoroughly understood by the bulk of practitioners; and every year a large number of persons are consigned to a life of darkness and misery from a want of appreciation of the importance of it. Patients have a great horror of enucleation, and require usually a great deal of pressing to submit to it; and for this reason the surgeon must be firm and unflinching, and must indicate the necessity for action in the most forcible language.

"Now, in by far the larger number of cases in which foreign bodies are lodged in the deeper parts of the eye, the visual power will have been destroyed immediately, or will certainly depart after a few days, and it will only be in exceptional cases that difficulty will arise in determining what should be done.

"Sometimes we may have an opportunity of extracting the foreign body, and there are some few cases on record where intruding substances have been extracted from the vitreous chamber, but it rarely happens that the combination of circumstances is sufficiently favourable to allow of this course being pursued. In my experience the vitreous becomes very quickly turbid after an injury, and the chance of extraction is slight, unless the patient is seen almost immediately after the accident, and when the position and relation of the foreign body can be unmistakably made out. Indiscriminate fishing for the intruding substance (a practice I have seen adopted more than once) is much to be deprecated, and can lead to no good results. Sometimes we may have strong reasons, from an examination of the track of the wound and other circumstances, for suspecting that the foreign body lies in a certain position, although we may not be able to see it. It is then justifiable to make a small incision in the sclerotic over the suspected spot; and cases are on record where this has been done with success. I need scarcely say these operations should never be undertaken by persons wholly unpractised in the delicate manipulations of ophthalmic practice. When patients are seen soon after an accident, it seldom happens that there can be much difficulty in deciding whether a foreign body is embedded in the vitreous or not, especially when it has passed through the cornea and iris, or lens, and there is little blood effused. It may be more difficult to diagnose between simple penetration and lodgment when the wound is made directly through the sclerotic, as we naturally miss the visible evidence of wounded intraocular structures.

"What should, then, guide our treatment in doubtful cases? In my opinion the following circumstances:—

"1. If there are the slightest signs of sympathetic ophthalmia in its fellow, the injured eye should be immediately excised.

"2. If vision is absolutely lost beyond hope of recovery, the eye should be sacrificed.

"3. If the wound is in the ciliary region, and there is no prospect of really useful vision, the eye should be excised.

"4. If the wound is not in a dangerous region, and the impaired vision seems to be in a great measure due to effused blood, I should not advise immediate operative interference.

"When once we have made up our minds that enucleation is necessary, is it advisable to wait till acute inflammatory symptoms have in a measure subsided? For my own part I think not. I have frequently performed enucleation during the most acute inflammatory stages, and I never have seen any bad

results follow. I believe by following this rule we may frequently curtail a great deal of pain and anxiety which would have been incurred by waiting.

"When foreign bodies are lodged in the anterior chamber, lens, or iris, they are generally clearly visible, and may usually be removed without much difficulty whilst the structures are still transparent. When they are lodged in the lens, no time should be lost, for sometimes it happens that a body which remained *in situ* whilst the lens was firm, disappears behind the iris when the lenticular matter becomes diffuent, and, if extraction be attempted at this period, special care must be employed, as the lenticular matter not unfrequently flows out, leaving the foreign body hidden by, or entangled in, the folds of the iris.

"Occasionally a foreign body which has been lodged in the eye will escape spontaneously."

55. *Tubercular Ulceration of the Conjunctiva*.—Dr. H. SATTLER, Assistant at Prof. Arlt's Ophthalmic Clinique, reports the following case of this hitherto unobserved disease:—

The subject of it was a tall, spare, pale man, who, according to his own account, had until lately been perfectly healthy. When I first saw him he was under treatment at Prof. Schrötter's Laryngoscopic Clinique, for a hoarseness of which he had been complaining for the last six months. In the course of the previous two years he had often had a cough. He had now been complaining frequently, for some months, of a burning sensation in the left eye. Upon examination I found the lids of this eye somewhat red and swollen, with numbers of dilated veins visible through the integument. The semilunar fold of the conjunctiva was very swollen and red, and the bulbar conjunctiva slightly injected, while the cornea and the deeper parts of the eye were perfectly normal.

The conjunctiva of the under lid was uniformly red and velvety. Scattered over it were several small ulcers, the largest being oval in shape, and measuring two lines in its long and one line in its short diameter. These ulcers had sharply cut margins, and their floors were covered with a grayish exudation. There was little or no inflammatory reaction in the conjunctiva surrounding the ulcers.

The upper lid was enlarged in every dimension, and flaccid. The entire retro-tarsal fold, as well as the conjunctiva covering the upper portion of the lid, was occupied by one extensive ulcer, the floor of which was hidden by a yellow, creamy exudation, its margin being jagged and sinuous. That part of the conjunctiva which the ulcer had not attacked was greatly injected, and the papillary bodies swollen. Towards the inner angle, the ulceration extended slightly on to the bulbar conjunctiva, as well as to the semilunar fold. Its boundary in this direction was not well defined, and here, too, the conjunctiva seemed swollen from infiltration.

Owing to the extreme rarity of tubercular ulcers of the conjunctiva, suspicion was directed to syphilis as the fundamental disease; and, in fact, the ulcers were at first regarded as being of secondary syphilitic nature. At the same time it was not possible to obtain any certain sign of previous syphilis either from the anamnesis, or from objective appearances on the body of the patient. The ulceration in the larynx was at once recognized as tuberculous by Prof. Schrötter, and the further progress of the case, too, spoke decidedly against syphilis. The ulcers of the conjunctiva were painted with a solution of corrosive sublimate, and touched with solid nitrate of silver at intervals of three or four days, while, a little later on, some mercurial inunctions were administered. The patient, however, became more debilitated. A healthy condition of the surface of the ulcers could not be attained; on the contrary, they extended more to the bulbar conjunctiva, and fresh ulcers formed upon the under lid. The way in which these formed was characteristic. At first a pale grayish and slightly prominent point appeared in the conjunctiva; gradually this became more of a yellowish shade, and then became abraded on the surface, producing an ulcer about the size of a pin's head, which slowly increased in size, and became confluent with others in the neighbourhood.

The patient's death took place about six weeks after he came under observation, and the autopsy removed all doubt as to the true nature of the affection.

No trace of syphilitic products could be found. In both lungs, besides old star-shaped, depressed cicatrices, there were yellowish, cheesy masses distributed; some solitary, and some collected in groups. In the cœcum and ascending colon extensive ulcers were found, the margins of which were steep and sinuous, and in their neighbourhood were many of those yellow cheesy masses. The free margin of the epiglottis presented the appearance of having been gnawed away, the cartilage being here and there laid bare. The mucous membrane on the inner wall of the larynx was ulcerated.

The microscopic examination of the conjunctiva was most interesting, and showed a condition highly characteristic of tubercular disease. There was an intense cellular infiltration of the conjunctiva. In the tissue of the membrane itself, as well as in the subconjunctival cellular tissue, distinctly circumscribed collections of round cells were found, the cells lying very close together. The periphery of these cellular aggregations became much more readily coloured with carmine than their centres. A careful examination showed, then, that the cells in the periphery were rich in protoplasm and contained several nuclei, while the centre was occupied by small cells having but one nucleus, by the shrunken remains of cells, or by detritus. The deeper lying aggregations of cells contained only well-formed elements, but the nearer the surface they lay, the more certain could one be of finding retrogressive changes in them. By the decay of these superficial aggregations the ulcers were produced, and the rapid extension of the latter was caused by the formation of fresh centres upon their floors and margins, as well as by the diffuse cellular infiltration which abounded. The ulcers penetrated deep into the upper lid, involving the Meibomian glands. The inflammatory reaction in their neighbourhood was but very slight, and there seemed to have been no attempt made at reparation of the loss of substance. With regard to the origin of the circumscribed cellular aggregations, I may say that some of them seemed to be simply hyperplastic lymphatic follicles (or trachoma glands), in the centre of which necrosis had come on. I ascertained also the origin of others beyond doubt from a circumscribed proliferation of the corpuscles of the adventitia of the small arteries and capillaries; which coincides with the observations made on the formation of tubercle in the pia mater, and in some other places.—*Irish Hospital Gaz.*, April 1, 1874.

MIDWIFERY AND GYNÆCOLOGY.

56. *Twin Pregnancy in a Double Uterus.*—Dr. PERRAULT relates a remarkable case of this in a woman 20 years of age. Labour being slow and the pains absent, version and subsequently application of the forceps to the after-coming head were resorted to. The abdomen was still large, and twin pregnancy was diagnosed. The placenta not separating, the hand was introduced and it was removed, and in searching over the fundus an opening was found in its upper and median part. Then, he says, he found another cervix uteri projecting into the uterus, just as the cervix projects into the vagina. Through this a second foetus was felt presenting by the shoulder. Version was performed, and a second foetus weighing 9½ lbs., removed. By a subsequent more complete examination M. Perrault convinced himself "that there were really two superimposed uteri, each with its distinct neck, and that the two foetuses could not even have had direct relations with one another during their intra-uterine life, the one being placed in an inferior, the other in a superior compartment." The patient died of puerperal fever, but no autopsy was allowed to clear up this apparently inexplicable case.—*Brit. and For. Med.-Chir. Rev.*, from *Lyon Médicale*, Aug. 31, 1873.

57. *Spurious Pregnancy with Labour.*—Dr. UNDERHILL reported the following curious case of this to the Obstetrical Society of Edinburgh, Jan. 28th, 1874. Previous to marriage the patient's (æt. 23) menses had been always

regular, painless, and lasted about four days. She was married in January last, menstruated in February as usual, and since then has seen a very small quantity of discharge every month or six weeks, seldom lasting more than a day, or being more than enough to stain one cloth. The discharges were not quite regular, and were sometimes accompanied by pain. In March, April, May, and June, she was sick, and vomited every morning, the sickness passing off about midday. From this time her belly began to swell, so that she several times found it necessary to let out her dresses. She has been feeling the movements of the child for several months, but does not know when she first felt them. Her breasts have also enlarged, but not very much.

On Nov. 13th Dr. U. was sent for in the morning and found her sitting up. "She said she had had pains off and on since the Monday, and had had a considerable 'show.' She also stated that the pains were coming on now about every ten minutes, had been bad all night, but were better in the morning.

"I was sent for again about 2 P. M., and found her lying on the bed undressed, and as I entered the room she was apparently in the middle of a violent expulsive pain. She was crying out lustily, and biting a handkerchief between her teeth to prevent her cries being heard, while at the same time she was pulling hard at a cloth attached to the bedpost by way of helping the pains. I was told that pains of similar severity were coming on every five minutes or oftener. She complained mostly of pain round the back and loins, and some little in her belly. I saw another pain very similar to the first I had seen, and then tried to make a vaginal examination, fully expecting to find labour well advanced. I found great difficulty in introducing my finger, owing to a most determined contraction of the thighs together, and as soon as I touched the vulva, she threw herself round on her back, struggling and shrieking loudly. She declared that the mere touching of the vulva gave her great pain in the back. The sphincter vaginae was in a condition of spasmodic contraction; but, by determined persistence, I at length managed to reach the os, and, to my surprise, found it quite virginal, small, round, and hard; the pelvic brim was not occupied by any swelling or hardness, but all the parts felt quite natural. In fact, neither pregnancy nor any condition of disease could be made out by the finger. On examining the abdomen, it was found to be moderately distended in its lower part, but not nearly large enough for a full-time pregnancy; it was resonant to percussion all over, but the tapping caused her to wince and cry out as if in pain. I then made gentle pressure towards the pelvic cavity, and while engaging the patient in conversation, pushed in my hand, so that I could feel the promontory of the sacrum, and satisfied myself that the cavity of the pelvis contained no tumour large enough to be felt from the outside. On examining the breasts, I found them full, but not hard, with a light-brown areola, but the nipples were small, and not puffy, or in any way resembling the nipple of pregnancy. I told her at once that she was not pregnant, and that the whole thing was a mistake; and afterwards, though she complained of soreness and pain round the back, she had no more of the imitative throes of labour.

"Thinking that there might be some vaginismus from the difficulty I had found in examining her, I asked her, and she stated that connection gave her great pain occasionally, but not always; and from her husband I learned that connection was perfect, and, as far as he knew, without any pain to her, and that at least she complained of none.

"The next day she was sitting up, the discharge still went on, but beyond a little soreness in the back, she was quite well. A dose of laudanum had given her a quiet night. Such are the facts of this case."

"The peculiarity of this case," Dr. U. remarks, "seems to be, that the patient is a young woman of good sense, and not at all of an hysterical character; that she was induced to believe in the existence of pregnancy by the opinion of her medical man, somewhat against her own judgment. She had some doubts about the pregnancy all the way through; that this notion had fixed itself in her mind; and that when a more than usually powerful stimulus to the sexual organs had arisen in the form of a delayed and, for her, unusually copious menstrual discharge, this notion had exploded in the pains of a simulated labour. The imitation of the labour-pains was very striking, the more so, as I found

subsequently that the patient had never seen a woman in labour. In the words of Hamilton, as quoted by Montgomery, 'She acquired the most accurate description of the breeding symptoms, and with wonderful facility imagined that she felt every one of them.'

Dr. DUNCAN said he had seen many cases of spurious pregnancy, but only one of spurious labour. This was a lady who had borne five children previously. The menses had stopped, or rather, there was a scanty discharge, and at the wrong time. The abdomen was greatly distended. He received a pressing message to go to the lady, but being out of the way, a second most pressing one came. His diagnosis was, on examination, that the whole thing was a mistake—there was no pregnancy. The lady was quite incredulous. She was no novice, having borne five children previously; she knew the symptoms well. Still, as before said, there was no genuine pregnancy—no living product. This lady, Dr. Duncan added, kept up the delusion well, and made her friends believe that she had really given birth to a child, but that it was still-born. Dr. Underhill might have entered more profoundly into the interesting subject—and it was really interesting. There were various degrees of it. For example, there were some who merely exhibited the symptoms of pregnancy, and these symptoms never culminate in spurious labour. Were it not for the undoubted fact that some of the lower animals, such as bitches, exhibited spurious parturition, he would be inclined to deny it altogether. As it was, the thing could not be challenged—it was no mistake or delusion—at least, barring a few cases; but a reality, and, in fact, a disease. Dr. Duncan desired to emphasize that a distinction should be made betwixt those cases where there was merely spurious pregnancy—that was to say, where women fancied themselves pregnant—and those where this fancied pregnancy culminated in a fancied or spurious labour. Authors had not sufficiently attended to this distinction.—*Edinburgh Med. Journ.*, March, 1874.

58. *Post-partum Hemorrhage treated by the Application of the Solid Perchloride of Iron to the Interior of the Uterus.*—Dr. A. H. RINGLAND communicated to the Dublin Obstetrical Society, March 14th, a paper on this subject. Having referred to the arguments for and against the use of the perchloride of iron in cases of *post-partum* hemorrhage, and also to Dr. Barnes's admission, that in the fluid form, as he and others use it, the styptic may not be entirely free from danger, the author said that in the employment of iron in a different form from that hitherto recognized, he was indebted in a great degree to accident, and to the fertile ingenuity of Mr. Weir, the Resident Medical Officer of the Combe Lying-in Hospital. In an extern midwifery case, on which that gentleman and the author were in attendance, and in which the application of the perchloride of iron was immediately demanded, neither the solution, nor the necessary apparatus for its employment, was at hand. Mr. Weir, however, happened to have some of the solid salt with him, and he suggested the feasibility of introducing with the hand a small piece of the solid salt, and painting therewith the bleeding surface of the uterine cavity. It was at once so employed; the hemorrhage was instantaneously stayed, and the case terminated favourably. This occurred in October, 1871. So successful was the result thus obtained, that since January, 1872, in twenty-three cases in which the use of the perchloride of iron to the interior of the uterine cavity was absolutely necessary—out of a total of 4500 deliveries, three-fourths of which were extern—the same method was adopted. Dr. Ringland gave, in chronological order, the particulars of each case in which the styptic was thus used, from which statement it appeared that out of the twenty-three cases, fourteen recovered well; three made tedious recoveries (one patient being the subject of constitutional syphilis, and the other two being threatened with pelvic cellulitis). There were six deaths. Two cases died, one within two, and the other within three hours after delivery. One patient, in advanced pulmonary consumption, died on the ninth day from phlebitis; another death from pyæmia could be adequately accounted for by a portion of the placenta being morbidly adherent, which could not be removed. In the remaining two fatal cases, the placenta was also adherent, and death took place in each, apparently from sinking of the vital powers. No

post mortem could be obtained in any of the fatal cases. Dr. Ringland did not think that death could be fairly attributed to the use of the styptic in these cases. Out of the entire number (twenty-three), all, or at least a very large proportion of them, would have died, were it not for its employment; every means known to science having been previously adopted in each case respectively, but without avail. Every patient was running down rapidly, a fatal result appeared impending, and the styptic was only applied when the patient was almost *in extremis*; and yet, of the whole number, only four (excluding the first two cases) succumbed after its application. The first duty of a medical man, Dr. Ringland believed, was to tide over the immediate danger, irrespective of future contingencies; the more especially as such are, as demonstrated in the cases submitted, only exceptional, and when they do arise are in many instances amenable to treatment. The first pressing duty is to save the woman from dying. The case is, that other means being exhausted, she would die unless local styptics be applied. Where, then, is the force of the objection, that these styptics may do ulterior harm?

Dr. T. MORE MADDEN had injected the perchloride of iron in ten cases of *post-partum* hemorrhage, since January, 1870. He did not assert that this mode of arresting such hemorrhage was safe or efficacious in all cases; but it was more efficacious than any other remedy we possessed. Having referred to the advantages and disadvantages of the procedure, Dr. More Madden went on to give, in detail, the history of the cases in which he had used it. In nine cases the hemorrhage was arrested at once. In one case the injection failed. Seven of the cases recovered; three died, but death was in no way connected with the injection of the perchloride. He, Dr. Madden, considered that Dr. Snow Beck had fallen into the error of mistaking the *post hoc* for the *propter hoc*, as regards the occurrence of deaths consecutive to the injection of the perchloride of iron. Dr. Madden also thought that the remedy was often abused; and was of opinion that its use should be restricted to the treatment of those cases in which the ordinary hæmostatics had failed. In conclusion, Dr. More Madden referred to the practice of the Dublin School of Midwifery, in (1) the proper management of the second stage of labour; (2) the following of the uterus down with the hand; and (3) in giving ergot when the head was on the perineum, as being valuable means of obviating the tendency to *post-partum* hemorrhage.

Dr. M'CLINTOCK said that when this subject had been brought before the Society over three years ago by Dr. Roe, it had not assumed the great importance it now possessed. Ergot, cold, the internal and external manipulation of the uterus, and electricity, were all powerful agents in arresting *post-partum* hemorrhage. There were three important practical points connected with the use of the perchloride of iron, which recommended it to our notice. viz., (1) its feasibility; (2) its efficacy; and (3) its safety. Those cases in which there has been the largest losses of blood are the most likely to prove fatal; therefore, a fatal result should not always be attributed to the action of this styptic. The only case in which death could, he, Dr. M'Clintock, believed, be fairly set down as due directly to the remedy, was the case referred to by Dr. Bantock in the late discussion at the London Obstetrical Society, in which the iron was used, not to arrest, but in order to prevent hemorrhage. In this case the injection may have escaped into the peritoneal cavity, and have caused the intense pain which lasted until the patient's death. As to the solution used, he, Dr. M'Clintock, employed the liquor ferri perchloridi fortior, diluted with three or four parts of water, which was equivalent to the weaker fluid of the Pharmacopœia. Dr. A. H. Ringland's cases should be excluded from the category of cases under consideration, both on account of the remedy that was used, and the mode of using it. The introduction of the hand into the uterus was *per se* a most powerful means of stimulating that organ. Dr. M'Clintock had injected the perchloride of iron in four cases of *post-partum* hemorrhage. Three of these cases were successful. In the fourth case the hemorrhage was followed by appalling exhaustion, not proportionate to the amount of blood lost. The patient died three hours after delivery. If the uterus is occupied by clots, they should be removed before the injection is used, as otherwise the styptic cannot

come in contact with the bleeding surface. This was not sufficiently attended to in the last case, which, probably, was the reason why the injection, though repeated, did not succeed in arresting the flow of blood.—*Irish Hospital Gaz.*, April 1, 1874.

59. *Use of the Chloride of Iron in Post-partum Hemorrhage.*—Dr. LOMBE ATTHILL read before the Dublin Obstetrical Society, March 14, 1874, an interesting paper on this subject, and relates five cases in his private practice, in which he resorted to that mode of treatment, and makes the following comments on the class of cases in which the injection is most likely to be useful, and as to its subsequent effects on the patients:—

1. It is noteworthy that the only cases which seemed in my practice to demand this treatment were women in a previously bad state of health. Case No. I. was that of a lady who not only suffered from sickness to an excessive degree during pregnancy, but who for a long time previous to, and of course also during her pregnancy, consumed almost no food, and what she did take was of an improper character. No. II. was markedly anæmic. No. III. was in such bad health as to cause much alarm to her friends on this account prior to labour. Cases Nos. IV. and V. were the same patient. She, too, was on both occasions in a very bad state of health—so bad, indeed, that the induction of premature labour seemed more than once demanded. In all it may be fairly assumed that the blood was in an abnormal condition, probably destitute of its proper proportion of fibrine. This seems specially likely to have been so in Case II., in which, though the uterus contracted fairly, the hemorrhage continued.

2. As to the results: In three of the four patients pregnancy subsequently ensued; this fact proves clearly that the injection of the perchloride of iron in no way injured the uterus.

In four of these five cases, notwithstanding previous bad health and the great loss of blood sustained at the time, no unpleasant symptoms of any kind subsequently presented themselves. In one case death ensued. Taking into account her previous ill-health and the acknowledged tendency which always exists to the occurrence of peritonitis after excessive losses of blood, it hardly seems a reasonable inference that in her case death was due to the effects of the injection of the styptic. The Society have, however, before them all the facts which I am possessed of, for no *post-mortem* examination was possible. My own opinion is that this patient would probably have died whether the perchloride had been injected or not. Pyæmia, phlebitis, and peritonitis have, as is well known, carried off numbers of patients who have suffered from *post-partum* hemorrhage, long before the injection of a styptic for its arrest was proposed, the debility resulting from the loss favouring the occurrence of these forms of disease; and in the case of the patient under consideration, the state of her health previous to labour aggravated the danger, to which all cases of hemorrhage are liable. But even were it proved that her death was the result of the use of the perchloride, a further question has yet to be decided—namely this, believing as I did and still do, that this patient would have died from hemorrhage, and that in a few minutes, was I justified in using an agent which alone, in my opinion, was capable of saving her life? supposing it to be proved that in a certain proportion of cases the use of that remedy would be followed by fatal results.

This question seems to me to be identical with that which is involved in deciding on all capital operations, notoriously in that of ovariectomy, and that it must be decided on the same principles. I shall not, therefore, discuss it further.

For myself I have arrived at the following conclusions:—

1. That cases of *post-partum* hemorrhage occur in which the injection of the perchloride of iron, or some similar styptic, is alone capable of arresting the hemorrhage.

2. That the injection of such styptic does not necessarily increase the tendency which exists in such cases to the occurrence of pyæmia, septicæmia or peritonitis.

3. That this treatment is specially applicable to anæmic patients.

4. That while it should never be had recourse to unnecessarily, it should not, on the other hand, be delayed too long.

I may add that in using the solution of the perchloride of iron, I carry out in the main the directions given by Dr. Barnes. I have not, however, in any case injected more than six or eight ounces, sometimes as little as four ounces of the fluid. I also use it somewhat stronger than he does, namely, in the proportion of one part of the strong liquor, B. P., to two of water. The important point in using it is to take care that the end of the tube is passed up to the fundus of the uterus, and that the fluid be injected slowly. I should add that I have not met with any case in which the uterus did not immediately contract firmly on the perchloride being injected. I am inclined to attribute this to the fact that I had recourse to the remedy before the powers of the patient were so exhausted as to render the uterus incapable of responding to the stimulus.—*Dublin Med. Journ.*, April, 1874.

60. *Fatal Result of Injection into the Vagina.*—M. LORAIN records an interesting observation of an injection into the vagina followed by death. The patient was a young girl, sixteen years of age, who was suffering from vaginitis, probably of a blennorrhagic character. After an emollient treatment, consisting of baths and injections of decoction of marsh-mallow, as the surface of the vagina could not be painted with a brush filled with solution of nitrate of silver, M. Lorain gave directions that a weak solution of the nitrate should be injected. This was accordingly done at 10.30 in the morning, with a small syringe containing scarcely five centigrammes of the fluid. The quantity of the solution injected only contained one decigramme (1.54 grain) of the nitrate, and it was thrown in with due care. Violent pain was immediately experienced. The patient displayed the most marked agitation. Ice was applied over the belly and to the vagina. The temperature of the vagina was 37.8 C. The following day the temperature fell to 37.2, but vomiting occurred. On the three succeeding days the condition remained unchanged. Stomatitis then supervened, resembling closely that produced by mercury. On the fifth day after the injection death occurred suddenly at 7 P. M. M. Lorain attributes the accident to the penetration into the peritoneum of a few drops of the pus proceeding from the passages and Fallopian tubes consequent on the writhings produced by the pain. A post-mortem examination made by M. Tardieu showed that there was metritis with suppuration. The *tubæ* were filled with pus, some of which had flowed into the peritoneal cavity and produced a diffused peritonitis. M. Lorain cites a number of other cases in which a similar accident had happened. He thinks that every woman attacked with vaginitis, accompanied by symptoms showing that the ovaries and Fallopian tubes are affected, is in great danger. The care of the practitioner should be directed to the prevention of all excitement on the part of the patient. Pain should be allayed by opiates and by hypodermic injections, the bowels kept open by means of emollient injections and sitz baths, whilst the abdominal walls should be supported and rendered immovable by a corset of elastic collodion; and, finally, no examinations should be made beyond those that are absolutely required for the purposes of diagnosis.—*The Practitioner*, March, 1874, from *Bull. Gén. de Thérapeut.*, No. ii., 1874.

61. *Syphilis communicated by the Finger of a Midwife.*—M. BARDINET read a paper at a recent meeting of the Academy of Medicine which created a sensation. The following is a summary of the communication. Early in 1873 the town of Brive was in the enjoyment of a good sanitary condition, and the results of confinements being especially favourable, when it became known that some women recently delivered were the subjects of syphilitic symptoms, which were participated in by several of their husbands and infants, some of the latter dying in consequence. Discords arose in families that had borne unexceptionable characters. After a while it was discovered that all the women who had so suffered had been attended by the same midwife, and that this midwife had a bad finger, there being an ulcer at the edge of the nail, traces of which still

existed a twelvemonth afterwards. How this ulcer arose she could give no definite account, but some time after its appearance she became ill and emaciated, exhibited a scaly eruption, lost her hair and eyebrows, and suffered much from neuralgic pains. Shortly after her husband exhibited very similar symptoms. During eight months, between February 28 and October 29, fifteen women whom she attended became ill, to which number have to be added eight of their husbands and nine of their infants—i. e., thirty-two individuals. This is, however, very far short of the entire number, the majority of the persons affected refusing to incur publicity by avowing the fact. From the inquiries which he made among the practitioners of the town, M. Bardinet believes that he is justified in considering the total of the cases to exceed one hundred. The practitioners of the place at once recognized the nature of the affection, and several of the persons affected pursued the midwife in a court of law. In March of the present year she was sentenced to two years' imprisonment and a fine of fifty francs.

M. Bardinet was employed by the court to examine into and report upon all the medical facts of the case. He found that towards the end of the first month after delivery, oftener during the second month, and sometimes during the third, a more or less abundant pustular eruption had appeared, commencing at the genital organs, and extending over the whole body. This was followed by lassitude, neuralgia, pains in the joints, desquamation of the palms of the hands and soles of the feet, and in almost all the cases great loss of hair. Among the husbands of these women, seven escaped contagion, but there is reason to believe that they had not cohabited with their wives; but the eight others, who had connection with their wives not long after delivery, exhibited well-marked syphilitic symptoms. Among the infants the eruption appeared in some at the end of a week, and in others at the latest before the end of the second. Of the fifteen infants of these women, nine suffered from the disease, and four of these died. In none of the cases observed was there either bubo or blenorragia present.—*Med. Times and Gazette*, May 25, 1874.

62. *Comparison between Hysterotomy and Ovariectomy.*—In a clinical lecture delivered at the Hôtel-Dieu M. RICHET drew a comparison between hysterotomy and ovariectomy. He pointed out that there was no relation between them in regard to their mortality; that in hysterotomy it was necessary to make the opening sufficiently large to permit the whole tumour to escape, whereas in ovariectomy, when no adhesions are present, a very small opening is all that is requisite to allow the cyst to be emptied and its collapsed walls to be drawn out. In hysterotomy the incisions must often extend from the pubis to the xyphoid cartilage. Hence the extremely dangerous nature of the operation. To diminish this danger it has been proposed to cut the uterus away piece by piece; but there is then the danger of fatal hemorrhage. Secondly, when the opening into the abdomen is made and the tumour has been removed, an extensive sutured wound remains, and the chances of evisceration are great, and it has actually happened in M. Richet's practice; and although in this instance the patient really died from pyæmia, the danger is not less real. The chief difficulty of the operation of hysterotomy is that of pediculating the tumour. In ovariectomy the walls of the cyst are often thin, and after the evacuation of the liquid a ligature can easily be applied; on the contrary, in hysterotomy the pedicle is often so large that it is often requisite to divide it into two parts, and ligature each half separately. It is necessary to tie the ligatures sufficiently tight to prevent hemorrhage; at the same time care must be taken not to lacerate the tissues, which are often sufficiently friable. After the ligature has been applied it remains to draw the pedicle to the surface, but the pedicle is inextensible, and in fact is directly continuous with the uterus. Hence for some time after the operation the patient experiences severe dragging pains in the pelvis, and sometimes it is absolutely necessary to relax the ligature and to remove the clamp. In ovariectomy it is possible to cause complete adhesion between the peritoneum and the pedicle; in hysterotomy this is not possible, and then a wall is formed from which it is requisite to remove the purulent

contents with the utmost care by frequent washing.—*Practitioner*, March, 1874, from *Le Progres Méd.*, Jan. 10, 1874.

63. *On the Local Treatment of Gangrenous Vulvitis in Young Girls by Iodoform Powder.*—This serious affection is in some cases connected with convalescence from scarlatina, the sequelæ of a severe attack of fever, or some similar assemblage of unhealthy conditions affecting the whole of the organism. The younger Guersant and M. Trousseau have given some most useful counsels on this subject. After the indications given by the most powerful modifying agents, these two practitioners have not feared to have recourse to the disorganizing action of the actual cautery. This agent has, according to their experience, proved the least uncertain method of circumscribing the limits of the evil. MM. Rilliet and Barthéz employed chloride of zinc for the same object, but these means are all very painful, and if, as it is affirmed in the *Progrès Médical*, M. PARROT, the surgeon to the Paris Children's Hospital, has succeeded in avoiding the disagreeable effects of this somewhat barbarous treatment, he will have effected great good. The topical application used at that establishment by the distinguished surgeon in question, is the iodoform powder, which is absolutely painless in use. During several years, M. Parrot has been tolerably successful in his treatment of ulcerated gangrenous vulvitis; combating it by the use of dressings of concentrated solution of chlorate of potash frequently renewed, or cauterizations with nitrate of silver. But neither of these methods, nor others needless to recapitulate, have been so uniformly successful as the iodoform. Iodoform alone, tried as a last resource after other topical applications, generally appeared to arrest the invading progress of ulcer in two or three days, and to rapidly facilitate the appearance of fleshy germs in the bottom of the wound. Iodoform in this case acts in the same way as in chancreous bubos, fungous ulcers, and hospital gangrene. But in order to attain the desired end the iodoform powder must be freely used; not the smallest portion of the wound must remain uncovered by it. When the bottom of the ulceration is very wet and the detritus plentiful, it is advisable to renew the dressing twice a day during the first two days.

The author of the article asserts that he has always very rapidly succeeded in modifying the appearance of these ulcerations by the use of this dressing, and even that he has so completely arrested their progress that none, which have been treated in the way indicated, have exceeded the size of a sixpence. It must also be noticed that this arrest of extension is accompanied by a rapid disappearance of the contiguous œdema, which raises the edges of the ulcerations and gives them a cup-like appearance.—*London Med. Record*, April, 1874.

64. *The Danger of Intra-Uterine Injections.*—The *Gazette de Joulin* gives the details of two cases, which show that while intra-uterine injections are energetic agents in modifying the conditions of this mucous cavity, they should be employed only with caution.

In one case, though the patient had become enfeebled by repeated hemorrhage, she endured, without suffering inconvenience, two injections of the uterine cavity. A third, consisting of a weak infusion of chamomile and diluted perchloride of iron, was succeeded by death in thirty hours, after decided symptoms of subacute peritonitis. The mucous lining of the uterus and right Fallopian tube, and the adjacent peritoneal surface, were found, after death, covered with an ink-black clot, and presenting unmistakable evidences of inflammation.—*Medical Examiner*, March 15, 1874.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Addendum to Art. IV. On Laparotomy as a Remedy in Cases of Intussusception, etc. By JOHN ASHHURST, Jr., M.D., etc.

Since my paper in the present number of the JOURNAL has been printed, the *Edinburgh Medical Journal* for June, and the last published volume (Vol. XIX., 3d Ser.) of the *Guy's Hospital Reports* have been received, and I find, in the former, a case of laparotomy for intussusception in a child five months old, terminating fatally on the second day, reported by Dr. John Duncan, and, in the latter, two cases of laparotomy for obstruction by a band—one fatal, one successful—reported by the operator, Mr. Howse, and a third case (fatal) of laparotomy for partial obstruction resulting from intestinal ulceration and omental adhesion, reported by the same gentleman as having occurred in the practice of Mr. Davies-Colley. This gives fourteen cases of laparotomy for intussusception, with five recoveries and nine deaths, or, if the cases recorded in this century only are considered, twelve with nine deaths, a mortality of 75 per cent. Adding Mr. Howse's three cases to the fifty-seven in the table (p. 61), we have a total of sixty cases of laparotomy for other causes than intussusception, with nineteen recoveries and forty-one deaths, a mortality of 68.33 per cent., or, including examples of intussusception, a grand total of 74 cases, with 24 recoveries and 50 deaths, a mortality of 67.57 per cent. In the *Lancet's* report of the discussion on Mr. Hutchinson's paper at the Royal Medico-Chirurgical Society of London (*Lancet*, Nov. 22, 1873, p. 738), Mr. Spencer Wells, after speaking of his published case of laparotomy for intussusception (*vide supra*, p. 57), is represented as having said that "he had operated upon other cases;" but the results are not given. This sentence does not occur in the reports furnished by the *Medical Times and Gazette* and the *British Medical Journal*. In the *Quarterly Summary* of the present number of this Journal (p. 265) will be found an interesting case in which a German surgeon, Dr. Betz, began, but did not complete, the operation of laparotomy, finding after the first incision had been made that it was possible to relieve the obstruction by external manipulation.

Epistaxis successfully Treated by Injections of Diluted Solution of the Subsulphate of Iron. By FRANKLIN N. STAUB, M.D., of Pittsburgh, Pa.

Mrs. K., æt. 75, retired to bed April 12th, complaining only of a feeling of weariness, no doubt dependent upon her old age. At ten o'clock the following morning, she was awakened by a discharge of blood from both nose and mouth, running in a continuous stream and almost choking her. The first hemorrhage was soon checked by administering common salt, in saturated solution, and afterwards giving her pills, composed of one quarter of a grain of opium and one grain of tannic acid.

The patient, a very active little woman, two days after (in opposition to my express injunctions to the contrary), went out walking. The same

night she again bled, had a recurrence of the epistaxis, which the family were able to check with the means previously used.

She had another recurrence of the hemorrhage the following afternoon, and for the first time fainted. I now tried the use of hot pediluvia, cold to the nape of the neck, and compression of the anterior nares; but none of the above means answered the purpose; I again tried to plug her nose, but found it impossible to do so, owing to the conformation of the posterior nares, pharynx, and posterior palatine arches, which were all small and contracted. The hemorrhage still continued, and I determined to test the efficacy of the officinal solution of the subsulphate of iron. I diluted the officinal solution with water, using the two in about equal proportions, and used an ordinary urethral syringe to inject into each nostril about one half ounce. The blood immediately coagulated on coming into contact with the solution, forming clots, which came away in the next two or three days, since which time there has been no loss of blood.

The entire quantity lost by the patient amounts to nearly sixty ounces (by measure), which, considering her great age, is an enormous quantity.

Podophyllin for Acute Rheumatism.—By R. F. DYER, M.D., of Ottawa, Ill.

About five years ago I accidentally discovered that the active principle of *Podophyllum peltatum* promptly relieved the pains in acute rheumatism. I usually follow it with the "alkaline treatment," and if the pains return recur again to the podophyllin. I commence with light doses combined with Dover's powder at intervals of two to four hours until the bowels are moved very freely several times, and have been frequently astonished at the amount required to effect this. In some cases I have given it in broken doses for three days before it took effect. The more severe the case the more it required. While the bowels could be acted upon easily by other remedies, the action of this was delayed. Sometimes two or three evacuations relieve; at others it requires eight or ten. After the bowels are evacuated, if relief is not obtained, I continue the use of the medicine in broken doses, not large enough to produce vomiting. If the pain returns in two or three days, I repeat the treatment. The iodide of potassium is a favourite remedy with me, combined with a syrup of cicicifuga. I have thought that perhaps it was the free purgation that afforded relief, but upon trying active catharsis from other remedies, I am fully satisfied that there is some specific influence exerted by the podophyllin. Having fully tested this remedy in the past five years, I now recommend it to the profession in all confidence, having given it in a large number of cases without a single failure in its affording relief from pain as soon as a free catharsis was produced.

DOMESTIC SUMMARY.

Traumatic Aneurism of Neck, Ligation of Left Common Carotid, with Permanent Silver Wire Ligature.—Dr. R. W. GIBBES, late Professor of Anatomy and Surgery in University of South Carolina, reports (*Charleston Med. Journ. and Rev.*, Jan. 1874) the case of a coloured man, aged forty, who was shot in the chin, Nov. 19, 1872.

Dec. 6th. Marked *fremissement* was observed over the whole left side, and there existed no doubt of formation of consecutive diffused aneurism. Left

arm almost completely paralyzed. On December 9th patient was operated upon, the usual incision being made along anterior border of sterno-mastoid muscle. The descendens noni was soon observed on anterior and inner surface of sheath, and drawn back by a blunt hook, as was also the internal jugular vein, which passed obliquely in front of the carotid below, and almost overlapped it at the omo-hyoid crossing. On opening the sheath, just above the omo-hyoid, and having the nerve and vein drawn well back, the pneumogastric was seen between the vessels, and posteriorly very deep. The artery was now raised on a grooved director, and the aneurism needle, armed with a small double silver wire, passed under it. The "bruit" heard under the stethoscope ceased immediately when the wire was drawn upon so as to occlude the canal. I then tied it in a common reef knot, cutting the ends off close, without having constricted the vessel sufficiently to divide either coat. The very short ends were turned against the vessel, or rather upon the constricting noose, and the wound closed by four silver wire stitches, including thickness of platysma myoides in each. Two strips of isinglass plaster were applied, and the upper part of wound covered with collodion.

I should have stated that close behind the upper end of my incision I found and removed a small piece, say about one-eighth, of the conical ball, which had been split off by the shattering of the bone, and is what was felt before the operation. The rest of it lies much deeper, and could not be found, it having injured not only the artery, but a part of the brachial plexus.

A director was now passed into the original wound, on side of chin, and a counter puncture made on neck, about two and a half inches under it, and one inch anterior to the superior angle of incision, a tent being introduced from below upward, on account of the suppuration connected with wound of maxilla.

One year after ligation patient was examined. The paralysis of right leg, the result of the operation, is much diminished, but still quite perceptible, and he walks well with a cane. The loss of power in the left arm (caused by the wound) is also somewhat improved. He uses it in eating, and in cutting wood, and can grasp one's hand pretty firmly in his palm, but not with ends of his fingers.

On applying the stethoscope a loud bellows sound is heard, occupying the whole left carotid region from sterno-clavicular junction to angle of maxilla, which ceases the instant that his head is extended, or his face slightly turned to the right, and also as soon as slight pressure is made on the vessel pulsating immediately behind the corner of the os hyoides. Whether this is the lingual or superior thyroid, I find myself unable to determine, although I think it is the latter. The carotid is felt pulsating strongly above the point of ligation, but below it appears as a firm cord, with only a slight impulse communicated to it from the arch of the aorta. I cannot feel the double constricting wire, but when the finger presses firmly on the spot, he says *he* feels it. I should have mentioned that the *bruit* is synchronous with the first beat of the heart, and extends over the second, masking it completely. No murmur can be heard on the right side of the neck, and none in the precordial region.

On the Spectrum of Bile.—Dr. J. C. DALTON recently read before the New York Academy of Medicine (*New York Med. Journ.*, June, 1874) a paper in which he discussed, first, the spectrum presented by fresh bile, which depends on the presence of its normal colouring matters; and, secondly, the spectrum presented by the coloured fluid of Pettenkofer's test, which depends for its production on the presence of the biliary salts.

Dr. Dalton gives the results of a series of observations on the spectroscopic characters of a number of different specimens of bile as follows:—

I. The spectrum of bile is characterized, as a general rule, by an absorption-band at C.

II. The existence and intensity of this band are proportional to the predominance of green in the colour of the bile.

III. The spectrum of the bile is also distinguished by a diminution or absence of the orange and yellow, and a corresponding extension of the red and green.

IV. There are sometimes also two other absorption-bands, comparatively uncertain and ill-defined, at D and at D 30 E.

V. The pure biliary salts in alcoholic solution, treated by Pettenkofer's test, give a spectrum with absorption-bands at E and F.

VI. In a watery solution, treated by the same test, they give a spectrum with but one absorption-band, namely, at E.

Treatment of Uterine Fibroid by Hypodermic Injections of Ergotine.—Dr. THEOPHILUS PARVIN records (*Am. Practitioner*, May, 1874) three cases of uterine fibroid, in which marked benefit followed the hypodermic administration of ergot. In all the cases heretofore treated, so far as Dr. Parvin knows, the ergotine has been administered with glycerine, which Dr. J. T. Bowls, of Knightstown, Ind., shows is a needless and may be injurious addition, causing in some cases painful inflammation and threatening abscesses, which was not observed when the glycerine was omitted, and the efficiency of the injection was not found to be lessened.

Dr. A. REEVES JACKSON reported to the Chicago Society of Physicians and Surgeons (*Chicago Med. Journ.*, June, 1874) five cases of fibrous tumour of the uterus treated by the method of Hildebrandt, and in three of them with decidedly favourable results.

Dr. Jackson obtained the best results from a solution prepared according to the following form: "Fifty grains of the extract (Squibb's) are dissolved in 250 minims of water, the solution filtered and made up to 300 minims, by passing water through the filter to wash it and the residue upon it. It represents ergot grain for minim, free from alcohol or other irritating substance."

Latterly he has used this solution exclusively, and thus far has seen no irritation, pain, or inflammation result from it.

He no longer selects the abdomen as the site for injection. Although some parts of the abdominal wall—as about the umbilicus, for example—may be less sensitive to puncture than others, yet all parts of it are more sensitive than the deltoid region; and inasmuch as the latter is more convenient, and the injections placed there equally efficacious, he now habitually selects the arm in preference to any other part of the body.

Another case was reported to the Society by Dr. J. H. ETHERIDGE, three by Dr. H. P. MERRIMAN, and one by Dr. S. FISHER, in all of which beneficial results followed the hypodermic use of ergotine.

Inversion of Uterus; Prompt Replacement.—Dr. G. W. H. KEMPER reports (*Indiana Journ. Med.*, March, 1874) an example of this in a woman aged 33, in her sixth labour. Fifteen minutes after the birth of the child, a violent pain came on which expelled the placenta beyond the vulva, and completely inverted the uterus. His first suspicion of an inversion was caused by the uterus escaping his grasp above the pubes, and disappearing into the pelvis.

"There was no unusual amount of hemorrhage, and her pulse was good. There was not the least tendency to shock, and the woman was not aware that anything unusual had occurred, until I began its reduction. Without waiting for chloroform or assistant, I hastily separated the placenta, which was adherent to the fundus, before attempting to replace the uterus. Pushing my right hand through the vulva into the vagina, while steadying the tissues above the pubes with my left, I indented the fundus with the tips of my fingers, and maintained a constant, steady pressure in the direction of the axis of the pelvis. In about five minutes my efforts were rewarded with success. I kept my hand in the uterus for a few moments and satisfied myself that every portion had been fully restored, and the outlines of the organ distinctly perceptible through the abdominal walls."

Dr. K. states that he had made but slight traction on the cord, not sufficient to cause the inversion.

Report on the Ovaries removed by Dr. Thomas.—In our preceding No., p. 577, we referred to the operation performed by Dr. T. G. Thomas for the removal of the ovaries. At the meeting of the New York Obstetrical Society,

February 17. Dr. NOEGGERATH read a detailed account of the macro- and microscopical examination of those ovaries. "The ovaries," he stated, "are of normal size, covered with numerous fine thread-like adhesions and filaments. Under the microscope both ovaries were found to be in a high degree of interstitial inflammation and fatty degeneration, the Graafian follicles partly obliterated and partly filled with hemorrhagic clots. A number of bodies similar to and probably Pacinian corpuscles, with what appeared to be nervous filaments leading to them, were found in the ovaries. from the whole appearance of which it was evident that no treatment short of removal would have been of service."

He attributes the constant and agonizing pain experienced by the patient in the ovaries not to the fatty degeneration, but principally to the inflammation of the peritoneal envelope of the organ and the consequent cicatricial contraction. This perimetritis may have been present since childhood, for he has seen a case in a child two and a half years of age.—*Am. Journ. of Obstet.*, May, 1874.

Bromide of Ammonium in Catamenial Excesses.—Dr. J. K. BLACK, of Newark, Ohio, has often tested the efficiency of this preparation in non-structural excesses, and he speaks (*Cincinnati Lancet and Observer*, May, 1874) with confidence of its valuable powers. He says he no more certainly anticipates the arrest of an attack of ague by the administration of quinia than does he anticipate the control of the forms of catamenial excess referred to, by the proper administration of the bromide of ammonium.

In the administration of the remedy an essential rule is, that its use shall precede the expected period by at least ten days. Its administration only during the crisis will do very little, if any, good. The sedative influence of the remedy must precede and accompany the stage of ovarian and uterine vascular engorgement, which itself preceded the flow by several days.

Some writers have spoken quite favourably of the remedy in dysmenorrhœa and menorrhagia, administered in the usual manner; that is, during the crisis only. Having been frequently called to see cases of these disorders during their progress, I have failed to observe any very satisfactory evidence of its controlling power while administered only during the emergency. But when administered according to the above directions, it has not only, almost without exception, lessened a regular monthly excess, but it has, in appropriate cases, in quite a number of instances which I can recall to memory, changed a two-week into a four-week crisis.

It is only necessary to say to the inexperienced practitioner, that any associated disorder, which has even a remote bearing upon the menstrual excess, should receive appropriate attention, else the controlling power of the bromide may be more or less uncertain or transitory in its beneficial effects.

Observations on the Normal Pulse, Respiration, and Temperature of Puerperal Women.—Dr. G. WILDS LINN, late Resident Physician to the Philadelphia Hospital, reports his temperature observations in a series of 24 normal puerperal cases occurring in the Philadelphia Hospital. The observations were begun immediately after delivery and continued for nine days, during which time the patients were kept in bed. The temperature was observed in the axilla at 9 A. M. and 8 P. M. While the cases were under observation no alcoholic stimulants were allowed. The diet consisted of milk, eggs, beef-tea, and mutton, with coffee or tea, and bread, toasted or plain, with butter.

The conclusions deduced from these observations are:—

1. That the normal temperature of the puerperal woman is only about $.6^{\circ}\text{F}$. higher than that of the healthy human being, if we accept the statement of Wunderlich, that the mean normal temperature is 98.6°F . ($=37^{\circ}\text{C}$.).
2. That the normal pulse of the puerperal woman is not more frequent than that found under ordinary conditions in a state of perfect health.
3. That the number of respirations is increased if the statement of physiologists be received, that the number of respirations of the healthy woman ranges from 18 to 20 per minute.

4. That the generally received opinion that the secretion of milk is attended by an increase in temperature of one or more degrees, and an increase in the frequency of the pulse of 10 or 12 beats per minute, is erroneous.

5. That a temperature of 100°F. ($= 37.77^{\circ}\text{C.}$) or a pulse of 100 per minute in the lying-in woman is indicative of some pathological process which it behooves the accoucheur to discover at once, in order that proper measures may be taken to arrest its development and remove the evil.—*Philada. Med. Times*, May 9, 1874.

These observations are in accord with those previously published by Barker, Winkel, Wolff, and Baumfelden.

Hydro-chloral by the Rectum in the Vomiting of Pregnancy.—Dr. D. B. SIMMONS, Chief Surgeon to Ken Hospital, Yokahama, Japan, reports (*Medical Record*, June 1, 1874) four cases of excessive vomiting of pregnancy in which 30 grain doses of chloral morning and evening, administered in mucilage by the rectum, afforded marked relief.

Should another opportunity offer, writes Dr. Simmons, for a trial of this plan of treatment, we have decided to commence with larger doses, being convinced that a decided impression, produced by the medicine at first, will require its repetition but two or three times to put an end to the disease, for the time at least.

We believe that hydro-chloral, administered in this manner, will relieve most cases of nervous or sympathetic vomiting, where there is no inflammation especially. Even in strangulated hernia, on theoretical grounds, it ought to act well, not only in checking the vomiting, but in producing relaxation. We should give it a trial also in cholera.

Drainage in Obstinate Chronic Inflammation of the Bladder.—Dr. HUNTER McGUIRE reports (*Virginia Med. Monthly*) a case of "chronic inflammation, and probably ulceration of the bladder," of eight years' duration, successfully treated by drainage; but instead of effecting this by opening the vesico-vaginal septum, as done by Simpson, Emmet, and Parvin, he introduced a piece of gum tubing, the portion of which to be introduced into the bladder was perforated by a shoemaker's punch, with holes half an inch apart. A straight silver tube was first passed into the bladder, and the gum tubing introduced through it; the silver tube was then withdrawn, and the gum one secured in place, and the free end put into a bottle to catch the urine. A vaginal suppository of morphia and belladonna was introduced. The catheter was removed and cleaned, a new one substituted whenever necessary, and the vaginal suppository was also repeated every twelve hours. Afterwards Dr. McG. substituted a large silver catheter, nearly straight, with a large vesical opening for the gum tube. At the end of six weeks a gum bag was attached to the free end of the silver catheter, so as to allow the patient to get up and walk about. This treatment was continued for four months, when the tube was removed from the bladder. There was for some time afterwards incontinence of urine, but the bladder gradually regained its healthy power, and eight months after the commencement of the treatment the patient could retain her urine for about three hours, and void it without pain; and, except the increased frequency of micturition, which is growing less, the patient is reported to be well.

Restraint of Hemorrhage during Operation in the Mouth.—Prof. E. ANDREWS recommends (*Medical Examiner*, April, 1873) the following procedure, suggested to him by Dr. Ira Manly, of Markezan, Wis., to overcome the difficulties encountered from hemorrhage in operations in the mouth.

The patient being first etherized in the ordinary way, the mouth is held open by an instrument devised for the purpose by Prof. E., and then the spray from the ether spray apparatus is to be directed upon the roof of the mouth, but not with such intensity as to produce freezing. The cold thus produced contracts the vessels, so that Prof. E. was able to perform uranoplasty with comparatively little delay from hemorrhage, or accumulation of mucus. At the same

time the patient, constantly inhaling the spray, the anæsthetic was steadily maintained.

Surgical Treatment of Naso-pharyngeal Polypi.—Dr. DAVID W. CHEEVER states (*Boston Med. and Surg. Journ.*, June 4, 1874) that “after a thorough review of all the measures which have been adopted to remove naso-pharyngeal polypi, we feel justified in drawing the following conclusions:—

“1. The excision, partial or complete, of the upper jaw is applicable only to the removal of tumours which grow from, or are attached to, some portion of that bone.

“2. Tumours having their origin either in the speno-maxillary fossa, the posterior nares, or the body of the occipito-sphenoid bone, can be attacked and completely removed by one of the operations for displacing the upper jaw, or the nose.

“3. In this second class of cases, to remove any portion of the bony structures of the face, when they are unaffected by disease and could be displaced and restored, is to cause a needless mutilation, and is contrary to sound principles of conservative surgery.

“4. For tumours in the speno-maxillary fossa, Langenbeck’s major operation is applicable.

“5. For the growths in the posterior nares and top of the pharynx, Ollier’s operation by displacing the nose; or Huguier’s operation, modified by us in keeping the vascular connection of the palate and pterygoid processes unbroken, will either of them prove sufficient to eradicate the disease.

“6. In very large tumours, there is no reason, *à priori*, why our operation of displacing the *whole* upper jaw should not succeed.”

The Influence of Anæsthetics on the Vaso-motor Centres.—In an interesting investigation on the influence of anæsthetics on the vaso-motor centres Dr. H. P. BOWDITCH and CHARLES S. MINOT, B.S. deduce (*Boston Med. and Surg. Journ.*, May 21, 1874) the following conclusion as possessing a high degree of probability:—

“While ether and chloroform resemble each other in their effect on those nervous centres whose activity is connected with the conscious perception of pain, the latter acts much more strongly than the former upon those centres which regulate the arterial blood-tension, and thus affects profoundly the conditions of animal life. Ether and chloroform are, therefore, both anæsthetics, but chloroform is, also, something more.”

Modification of Trommer’s Test for Sugar.—Dr. GEORGE B. FOWLER made some interesting remarks before the Northwestern Medical and Surgical Society, New York (*N. Y. Med. Journ.*, June, 1874), relating to the various tests of urine, and particularly with reference to a modification of Trommer’s test for sugar. In order to use this test, take one ounce of water and add to it one drop of honey; apply Trommer’s test to a portion in a test-tube, and the chemical reaction will take place. Take one ounce of urine and add to it one drop or as much honey as you please; apply Trommer’s test, and a transparent molasses-colour will result. Take the precipitated red oxide of copper which resulted in the watery solution in the first case and add boiling urine: the red precipitate will immediately disappear. The urine, therefore, possesses the property of dissolving the red oxide of copper, upon the appearance of which Trommer’s test depends. But a certain quantity of urine can only dissolve a certain amount of the copper. So, if we add an excess of copper, this excess will be precipitated by the sugar, and the usual reaction will show itself. But when three or four drachms of urine are used, as is always the case, the quantity of potash solution which will have to be added in order to produce a clear blue colour will overrun an ordinary-sized test-tube. Therefore, take from five to ten drops of the suspected urine and add two or three drops of the sulphate of copper solution (1 $\frac{3}{4}$ to 1 $\frac{3}{4}$). Then pour in the alkali until a transparent blue colour appears. Now boil, and the reaction will be perfectly distinct and satisfactory.

JEFFERSON MEDICAL COLLEGE.

PHILADELPHIA, PA.

The next annual session will commence on Monday, October 5th, 1874.
Preliminary Lectures from Monday, September 7th, 1874.

FACULTY.

JOSEPH PANCOAST, M.D., Emeritus.
S. D. GROSS, M.D., LL.D., D.C.L. Oxon., Surgery.
ELLERSLIE WALLACE, M.D., Obstetrics.
B. H. RAND, M.D., Chemistry.
J. B. BIDDLE, M.D., Materia Medica.
J. A. MEIGS, M.D., Institutes of Medicine.
J. M. DA COSTA, M.D., Practice of Medicine.
W. H. PANCOAST, M.D., Anatomy.

The Surgical Clinic will be under the charge of Professors JOSEPH PANCOAST, S. D. GROSS, and W. H. PANCOAST.

The Medical Clinic by Professors DA COSTA, RAND, BIDDLE, and MEIGS. Professors DA COSTA and MEIGS give clinical instruction at the Pennsylvania Hospital, in the immediate vicinity of the College.

The Clinic of Diseases of Women by Professor WALLACE.

The Eye and Ear Clinic by Drs. R. J. LEVIS and W. THOMSON, Surgeons to the Wills Hospital. Clinical Instruction is also given at the Philadelphia Hospital. The surgical staff of this hospital includes Professor PANCOAST, and Drs. JOHN H. BRINTON and F. F. MAURY, lecturers at the Jefferson College.

T. H. ANDREWS, M.D., Demonstrator of Anatomy.

J. EWING MEARS, M.D., Demonstrator of Surgery.

Subjects in the Dissecting Room are furnished *free of expense*, and there are no incidental charges.

Number of students last session, 473; of graduates, 151. Fees, full course, \$140; Matriculation fee (paid once only) \$5; Graduation fee, \$30.

J. B. BIDDLE, M.D.,

Dean.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1874-75.

The Collegiate year in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1874-75 will commence on Wednesday, September 16, 1874, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students designing to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, September 30, 1874, and end about the 1st of March, 1875.

FACULTY.

ISAAC E. TAYLOR, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M.D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

FRANK H. HAMILTON, M.D., LL.D., Professor of Practice of Surgery with Operations and Clinical Surgery.

LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M.D., Professor of Clinical and Operative Surgery.

W. H. VAN BUREN, M.D., Professor of Principles of Surgery, with Diseases of the Genito-Urinary System and Clinical Surgery.

WILLIAM T. LUSK, M.D., Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

EDMUND R. PEASLEE, M.D., LL.D., Professor of Gynecology.

EDWARD G. JANEWAY, M.D., Lecturer on Materia Medica and Therapeutics and Clinical Medicine.

AUSTIN FLINT, Jr., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSEY, M.D., Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., Professor of Chemistry and Toxicology.

Professors of Special Departments, etc.

HENRY D. NOYES, M.D., Professor of Ophthalmology and Otology.

EDWARD L. KEYES, M.D., Professor of Dermatology, and Assistant to the Chair of Principles of Surgery, etc.

EDWARD G. JANEWAY, M.D., Professor of Pathological and Practical Anatomy. (Demonstrator of Anatomy.)

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons to the Bellevue Hospital.

The Summer Session will consist chiefly of Recitations from Text-books. This term continues from the middle of March to the middle of June. During this Session there will be daily recitations in all the departments held by a corps of examiners appointed by the regular Faculty. Regular Clinics will also be held.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including	
Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations and Clinics	50 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. AUSTIN FLINT, Jr., Bellevue Hospital Medical College.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS.

NINETY-FIRST ANNUAL ANNOUNCEMENT. (1874-75.)

FACULTY OF MEDICINE.

CHARLES W. ELIOT, LL.D., President.	DAVID W. CHEEVER, M.D., Adjunct Professor Clinical Surgery.
CALVIN ELLIS, M.D., Prof. of Clinical Medicine, Dean.	JAMES C. WHITE, M.D., Prof. of Dermatology.
JOHN B. S. JACKSON, M.D., Prof. of Pathol. Anat.	ROBERT T. EDES, M.D., Assistant Professor of Materia Medica.
OLIVER W. HOLMES, M.D., Prof. of Anatomy.	HENRY P. BOWDITCH, M.D., Assistant Professor of Physiology.
GEORGE C. SHATTUCK, M.D., Professor of the Theory and Practice of Physic.	CHARLES B. PORTER, M.D., Demonstrator of An- atomy, and Instructor in Surgery.
HENRY J. BIGELOW, M.D., Professor of Surgery.	FREDERICK I. KNIGHT, M.D., Instructor in Per- cussion, Auscultation, and Laryngoscopy.
GEORGE DERBY, M.D., Professor of Hygiene.	J. COLLINS WARREN, M.D., Instructor in Surgery.
JOHN E. TYLER, M.D., Prof. of Mental Diseases.	REGINALD H. FITZ, M.D., Asst Professor of Pathological Anatomy.
CHARLES E. BUCKINGHAM, M.D., Prof. of Obstet- rics and Medical Jurisprudence.	EDWARD S. WOOD, M.D., Asst Professor of Chem- istry.
FRANCIS MINOT, M.D., Assistant Professor of the Theory and Practice of Medicine, and Clinical Lecturer on the Diseases of Women and Children.	HENRY H. A. BEACH, M.D., Assistant Demon- strator of Anatomy.
JOHN P. REYNOLDS, M.D., Instructor in Obstetrics.	
HENRY W. WILLIAMS, M.D., Professor of Oph- thalmology.	

LECTURERS.

FRANCIS B. GREENOUGH, M.D., and EDWARD WIGGLESWORTH, Jr., M.D., on Syphilis.

J. ORNE GREEN, M.D., and CLARENCE J. BLAKE, M.D., on Otology.

JAMES R. CHADWICK, M.D., on Diseases of Women. CHARLES P. PUTNAM, M.D., on Diseases of Children.

JAMES J. PUTNAM, M.D., on the Application of Electricity in Nervous Diseases.

The plan of study was radically changed in 1871. Instruction is given by lectures, recitations, clinical teaching, and practical exercises, distributed throughout the academic year. This year begins October 1st, 1874, and ends on the last Wednesday in June, 1875. It is divided into two equal terms, with a recess of one week between them. Either of these two terms is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction. The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically from one subject to another in a just and natural order. In the subjects of anatomy, histology, chemistry, and pathological anatomy, laboratory work is largely substituted for, or added to, the usual methods of instruction.

Instead of the customary, hasty, oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of examinations on all the main subjects of medical instruction has been distributed through the whole three years; and every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction during his period of study.

DIVISION OF STUDIES.

For the First Year—Anatomy, Physiology, and General Chemistry.*For the Second Year*—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.*For the Third Year*—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

Students are divided into three classes, according to their time of study and proficiency. Students who began their professional studies elsewhere may be admitted to advanced standing; but all persons who apply for admission to the second or third year's class must pass an examination in the branches already pursued by the class to which they seek admission. Examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and General Chemistry.

End of second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

End of third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, and Surgery.

Examinations are also held a week before the opening of the School in September.

Students who do not intend to offer themselves for a degree will also be received at any part of the course, for one term or more. Any student may obtain, without an examination, a certificate of his period of connection with the school.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this School, have passed the required examinations, and have presented a thesis.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine additional facilities for pursuing clinical, laboratory and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises the following branches: Physiology; Medical Chemistry; Pathological Anatomy; Surgery; Auscultation, Percussion and Laryngoscopy; Ophthalmology; Otology; Hygiene; Dermatology; Syphilis; Psychological Medicine; Electro-therapeutics; Gynecology; and Obstetrics.

Single branches may be pursued, and on payment of the full fee also the privilege of attending any of the other exercises of the Medical School, the use of its laboratories and library, and all other rights accorded by the University will be granted. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—For Matriculation, \$5; for the Year, \$200; for one Term alone, \$120; for Graduation, \$30. For Graduates' Course, the fee for one year is \$200; for one Term, \$120; and for single courses such fees as are specified in the Catalogue. Payment in advance.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

DR. R. H. FITZ, Sec'y, 108 Boylston St., Boston, Mass.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

MEDICAL FACULTY.

A. H. CENAS, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLE, M.D., Professor of Physiology and Pathological Anatomy.

JAMES JONES, M.D., Professor of Obstetrics and Diseases of Women and Children.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

FRANK HAWTHORN, M.D., Professor of Materia Medica and Clinical Lecturer upon Obstetrics and Diseases of Women and Children.

EDMOND SOUCHON, M.D., Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the fortieth year of its existence) will commence on Monday, the 16th day of November, 1874, and terminate on the third Saturday of March, 1875. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 20th of October, without any charge to students.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. In addition to the regular didactic lectures given by the several Professors, there is attached to each separate chair a Practical Department, in which students can observe and verify for themselves the facts inculcated and discussed in the lecture-room. It is to this peculiar feature of the University, and its unequalled hospital advantages, that the Faculty would direct the attention of those engaged in the study of Medicine, or who, having graduated elsewhere, desire to perfect themselves in any particular branch of the profession.

CLINICAL INSTRUCTION.

The act establishing the University of Louisiana gives the Professors of the Medical Department the use of the Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received during the past year more than *six thousand* patients. Its advantages for professional study are unequalled by any similar institution in this country. The medical, surgical, and obstetric wards are visited daily by the respective professors in charge, from 8 to 10 o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

Special instruction is given to the candidates for graduation, who are, for this purpose, divided by the Dean of the Faculty into classes, and assigned to the respective professors in charge of wards in the hospital. The classes thus formed interchange courses so as to enable the candidates to enjoy equal advantages. Thoroughly competent Chiefs of Clinic will aid the Clinical Teachers in developing to its full extent this system of instruction. Students who are not candidates for graduation make the daily hospital rounds with any of the clinical teachers. The following professors and their respective Chiefs of Clinic will be on duty during the ensuing year.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Hawthorn, and Special Pathological Anatomy by Professor Chailé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

Obstetrical cases are assigned to the candidates for graduation under the direction of the Clinical Teacher. *Post-mortem* examinations are made in the presence of the class.

The administration of the hospital elect annually twelve resident students, who are nominated by the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Graduates of other recognized schools may attend all the lectures upon payment of the matriculation fee; but they will not be admitted as candidates for the Diploma of the University except upon the terms required of second course students. All fees are payable in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean*.

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, announce that at the annual meeting, held June 1, 1874, it was voted that no dissertation worthy of a prize had been offered on either of the subjects proposed for 1874.

The following are the subjects proposed for 1875:—

1. Original Researches in Medical Science.
2. So-called "Concussion of the Spine."

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1875, will be entitled to a premium of One Hundred and Fifty Dollars.

Dissertations on the above subjects must be transmitted, post paid, to J. B. S. Jackson, M.D., Boston, *on or before the first Wednesday in April, 1875.*

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For further and detailed information, see Boston Medical and Surgical Journal, of June 11, 1874, or address

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THE OBSTETRICAL JOURNAL OF GREAT BRITAIN AND IRELAND;

INCLUDING MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN. With an American Supplement, Edited by W. F. JENKS, M.D., Surgeon to the State Hospital for Women, Philadelphia. Published Monthly; each No. containing not less than 80 octavo pages, very handsomely printed. Price Five Dollars per annum, in advance. Single Numbers, 50 cents.

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* * Complete sets from the commencement can no longer be furnished. A few sets for 1874 can still be had, or new subscribers can begin with Vol. II., April, 1874.

HENRY C. LEA—Philadelphia.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR OCTOBER 1874.

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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers prior to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Several original articles and bibliographical notices in type have been laid over for want of room. We ask the indulgence of our contributors, and assure them that their favours shall receive early attention.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrative or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

We expect to be able in our next number to lay before our readers a full account of malarial hæmaturia, with the results of careful microscopical and chemical examinations of the urine, etc.

The following works have been received:—

Ueber Zufälle nach Operationem an den Hamund Geschlechtsorganen. Von Dr. Jos. ENGLISH, Doc. fur Chir. an der Wiener Universität.

Recerche Intomo Alla Belharzia Hæmatobia in relazione Colla Ematuria Endemica dell' Egitto E Nota Intomo ad un Nematodeo trovato nel Sangue Umano Lavato del Dottor Prospero Sorsino.

Inspeccion General de las Obrus y Dependencias de la Empresa de Aguas Corrientes Ordenada por la Junta Económico-Administrativa. Montevideo, 1874.

Quale Possa Essere il Farmaco Meglio Opportuno tanto a preverie quanto a Combattero I Morbo Pestilenziali. Lettera del Dottore Socrate Cadet.

Saint Thomas's Hospital Reports. New series. Edited by Dr. BRISTOWE, Dr. STONE, and Mr. CROFT. Vol. IV. London: J. & A. Churchill. 1873.

The Physiology of the Circulation in Plants, in the Lower Animals, and in Man. By J. BELL PETTIGREW, M.D., F.R.S. Illustrated by one hundred and fifty engravings on wood. London: Macmillan & Co., 1874.

On Mycetoma or the Fungus Disease of India. By H. VANDYKE CARTER, M.D., Lond., H. M. Indian Army. J. & A. Churchill, 1874.

An Inquiry into the Value of the Signs and Symptoms regarded as diagnostic of Congenital Syphilis in the Infant. By THOMAS BALLARD, M.D. London: J. & A. Churchill, 1874.

The Period of Infection in Epidemic Disease. By WILLIAM SQUIRE, M.D. London: J. & A. Churchill, 1874.

On the Hours of Maximum Mortality in Acute and Chronic Diseases. By JAMES FINLAYSON, M.D. Glasgow, 1874.

Electro-Therapeutics: A Condensed Manual of Medical Electricity. By D. F. LINCOLN, M.D., Phys. to the Dept. of Diseases of the Nervous System, Boston Dispensary. Philadelphia: Henry C. Lea, 1874.

Essays on Conservative Medicine and Kindred Topics. By AUSTIN FLINT, M.D., Prof. of Prin. and Prac. of Med., and Clinical Med., in Bellevue Hosp. Med. Coll., New York. Philadelphia: Henry C. Lea, 1874.

A Practical Treatise on the Diseases of Women. By T. GAILLARD THOMAS, M.D., Prof. of Obstetrics and Dis. of Women and Children in Coll. of Phys. and Surgeons, New York, etc. Fourth ed., thoroughly revised. Philadelphia: Henry C. Lea, 1874.

A Complete Handbook of Obstetric Surgery: or Short Rules of Practice in every emergency from the simplest to the most formidable operations connected with the science of Obstetrics. With numerous illustrations. By CHARLES CLAY, M.D., late Sen. Surgeon and Lect. on Midwifery, St. Mary's Hosp., Manchester, etc. From the third London ed. Philadelphia: Lindsay & Blakiston, 1874.

Surgical Emergencies; together with the Emergencies attendant on Parturition and the treatment of Poisoning. A Manual for the use of general practitioners. By WILLIAM PAUL SWAIN, F.R.C.S., Surgeon to the Royal Albert Hospital, Devonport. Philadelphia: Lindsay & Blakiston, 1874.

Cocain, Veratria, and Gelseminum, Toxicological Studies. By J. OTT, Easton, Penna. Philadelphia: Lindsay & Blakiston, 1874.

Transactions of the Pathological Society of Philadelphia. Vol. IV. Edited by JAMES TYSON, M.D., Recorder of the Society. Philadelphia: J. B. Lippincott & Co., 1874.

The Physiology of Man; designed to represent the existing state of Physiological Science, as applied to the Functions of the Human Body. By AUSTIN FLINT, Jr., M.D., Prof. of Physiology and Phys. Anat. in the Bellevue Hospital Med. Coll., New York, etc. etc. Vol. V. Special Senses, Generation. New York: D. Appleton & Co., 1874.

The Medical Register and Directory of the United States. By SAMUEL W. BUTLER, M.D. Philadelphia, 1874.

Nomenclature of Diseases prepared for the use of the Medical Officers of the U. S. Marine Hospital Service by the Supervising Surgeon (JOHN M. WOODWORTH, M.D.). Being the classification and English-Latin Terminology of the Provisional Nomenclature of the Royal College of Phys., London. Washington, 1874.

Diseases of the Conjunctiva. By DUDLEY S. REYNOLDS, M.D. Louisville, 1874.

Recent Advances in the Diagnosis of Diseases of the Nervous System. By HORATIO R. BIGELOW, M.D., of Hartford, Conn. Detroit, 1874.

A Case of Anchylosis of the Right Temporo-Maxillary Articulation, successfully treated by Excision of the Condyle; with remarks by JAMES L. LITTLE, M.D., Surgeon to St. Luke's Hospital. Albany, 1874.

Clinical Report of the Lying-in Service at Bellevue Hospital for the year 1873. By WILLIAM T. LUSK, M.D., Prof. of Obstet. and Dis. of Children in Bellevue Hosp. Med. Coll. New York, 1874.

The Relation of Medical Societies to Progress in Science. By ALEX. J. C. SKENE, M.D. Brooklyn, 1874.

Catalogue of the Specimens in the Pathological Museum of the Philadelphia Hospital. Prepared by JAMES TYSON, M.D., one of the Attending Physicians and Pathologist to the Hospital; assisted by R. M. BERTOLET, M.D., Microscopist to the Hospital. Philadelphia, 1874.

Medical Literature of Kentucky. By LUNSFORD P. YANDELL, M.D. Louisville, 1874.

Inorganic Cardiac Murmurs. By A. T. KEYT, M.D., of Cincinnati.

Divulsion in Stricture of the Urethra. By SAMUEL LOGAN, M.D., Prof. of Anat. and Clin. Surgery, Univ. of La.

A New Method of treating Malignant Tumours by Electrolyzing the Base. By GEORGE M. BEARD, A.M., M.D.

Psychical or Physical. By C. H. HUGHES, M.D., St. Louis.

Atmospheric Electricity and Ozone; their relation to Health and Disease. By GEORGE M. BEARD, M.D. New York, 1874.

On Strain and Over-Action of the Heart. By J. M. DA COSTA, M.D., Prof. of Prac. of Med in Jefferson Med. Coll., Phila. Toner Lecture delivered May 14, 1874. Washington: Smithsonian Institution, Aug. 1874.

The Yellow Fever Epidemic of 1873. The White Blood-Corpuscle. By JEROME COCHRAN, M.D., Professor of Public Hygiene and Med. Jurisp. in Med. Coll., Ala. Montgomery, 1874.

Address of Joseph M. Toner, M.D., President of the American Medical Association. Philadelphia, 1874.

Report of the Board of Health of the City and Port of Philadelphia, 1873.

Report of the Board of Health of the City of Boston, 1874.

Proceedings of the Academy of Natural Sciences of Philadelphia. Jan., Feb., March, 1874.

Transactions of the Kentucky State Medical Society. Louisville, 1874.

Transactions of the Medical Society of the District of Columbia. Washington, 1874.

- Transactions of the Medical Association of Missouri, 1874. Kansas City, 1874.
 Transactions of the Medical Society of California, 1873-1874. Sacramento, 1874.
 Transactions of the South Carolina Medical Association, 1874. Charleston, 1874.
 Transactions of the Medical and Chirurgical Society of the State of Maryland, 1874.
 Baltimore, 1874.
 Transactions of the Medical Society of the State of West Virginia. Wheeling, 1874.
 Transactions of the Medical Society of the County of Albany, from 1851 to 1870.
 Albany, 1872.
 Transactions of the Clinton District Medical Society of the State of Missouri.
 Mexico, Mo., 1874.

The following Journals have been received in exchange:—

- Kin-Se I-Setzu. Nos. 1 and 2. Japan, 1874.
 Deutsches Archiv für Klinische Medicin. Bd. xiii. Heft 4, 5, 6. Bd. xiv. Heft 1.
 Archiv für Anatomie, Physiologie, und Wissenschaftliche Medicin. 1873, Nos.
 5, 6, and No. 1, 1874.
 Centralblatt für die Medicinischen Wissenschaften. Nos. 29 to 41, 1874.
 Allgemeine Wiener Medizinische Zeitung. Nos. 24 to 35, 1874.
 Archiv der Heilkunde, 1874, 3 and 4 heft.
 Nordiskt Medicinskt Arkiv, 1874. Andra Häftet.
 Giornale Italiano delle Malattie Veneree e della pelle. Giugno, 1874.
 L'Imparziale. Nos. 12, 15, 16, 1874.
 O Correio Medico de Lisboa. Nos. 16, 17, 18, 19.
 Lo Sperimentale. Fascic. 5, 6, 1874.
 Archives Générales de Médecine. Juillet, Aout, Septembre, 1874.
 Annales de Dermatologie et de Syphiligraphie. Tom. v. No. 5.
 Revue des Sciences Médicale en France et de l'Etranger. Juillet, 1874.
 Gazette Hebdomadaire de Médecine et de Chirurgie. Nos. 25 to 36. 1874.
 L'Union Médicale. Nos. 72 to 107, 1874.
 Le Mouvement Médical. Nos. 24 to 36. 1874.
 La Tribune Médicale, Nos. 304 to 316, 1874.
 Le Progrès Médical, Nos. 21 to 35, 1874.
 The Retrospect of Medicine. January-June, 1874.
 The British and Foreign Medico-Chirurgical Review. July, 1874.
 The Lancet. July, Aug., Sept., 1874.
 The Medical Times and Gazette. July, Aug., Sept., 1874.
 The British Medical Journal. July, Aug., Sept., 1874.
 The London Medical Record. July, Aug., Sept., 1874.
 The Practitioner. July, August, September, 1874.
 Edinburgh Medical Journal. July, August, September, 1874.
 The Journal of Anatomy and Physiology. Nov., 1873. May, 1874.
 The Dublin Journal of Medical Science. May, June, July, August, 1874.
 The Sanitary Record. July, August, September, 1874.
 Irish Hospital Gazette. July, August, September, 1874.
 The Glasgow Medical Journal. July, 1874.
 The Indian Medical Gazette. June, July, August, 1874.
 Canada Medical and Surgical Journal. July, September, 1874.
 The Canada Lancet. July, August, Sept., 1874.
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 The Obstetrical Journal of Great Britain and Ireland. With an American Supple-
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 The Boston Medical and Surgical Journal. July, August, September, 1874.
 The New York Medical Journal. July, August, September, 1874.
 The Medical Record. July, August, September, 1874.
 The American Journal of Insanity. July, 1874.
 The American Journal of Syphilography and Dermatology. July, 1874
 The American Journal of Obstetrics. August, 1874.
 The Buffalo Medical Journal. June, July, 1874.
 The Psychological and Medico-Legal Journal. July, August, September, 1874.
 The Philadelphia Medical Times. July, Aug., Sept., 1874.
 The Medical and Surgical Reporter. July, Aug., Sept., 1874.
 Half-Yearly Compendium of Medical Science. July, 1874.
 Archives of Ophthalmology and Otology, Vol. iv. No. 1.
 The Cincinnati Lancet and Observer. July, Aug., Sept., 1874.

The Cincinnati Medical News. July, August, September, 1874.
 The Clinic. July, Aug., Sept., 1874.
 The American Practitioner. July, Aug., Sept., 1874.
 The Medical Examiner. July, Aug., Sept., 1874.
 The Chicago Medical Journal. July, August, 1874.
 The Indiana Journal of Medicine. July, August, September, 1874.
 The Detroit Review of Medicine and Pharmacy. July, Aug., Sept., 1874.
 The St. Louis Medical and Surgical Journal. July, Aug., Sept., 1874.
 The Missouri Clinical Record. July, Aug., Sept., 1874.
 The Northwestern Med. and Surg. Journal. June, 1874.
 The Medical Herald. July, August, 1874.
 The Kansas City Medical Journal. July, August, September, 1874.
 The Peninsular Journal of Medicine. July, Aug., Sept., 1874.
 The Pacific Medical and Surgical Journal. July, August, September, 1874.
 The Western Lancet. June, July, August, 1874.
 The Chicago Journal of Nervous and Mental Diseases. July, 1874.
 Virginia Medical Monthly, July, August, September, 1874.
 Charleston Medical Journal and Review. July, 1874.
 The Southern Medical Record. June, July, 1874.
 Atlanta Medical and Surgical Journal. July, August, 1874.
 The New Orleans Medical and Surgical Journal. July, September, 1874.
 The Richmond and Louisville Medical Journal. July, August, 1874.
 The Nashville Journal of Medicine and Surgery. June, July, Aug., Sept., 1874.
 Baltimore Physician and Surgeon. July, August, September, 1874.
 The Sanitarian. July, Aug., Sept., 1874.
 The American Journal of Pharmacy. July, Aug., Sept., 1874.
 The Druggist's Circular. July, Aug., Sept., 1874.
 The Journal of Materia Medica. June, July, August, 1874.
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 New Remedies. July, 1874.
 Archives of Electrology and Neurology. May, 1874.
 The American Journal of Science and Arts. July, Aug., Sept., 1874.
 The American Naturalist. July, Aug., Sept., 1874.
 The American Chemist. June, July, 1874.
 The Boston Journal of Chemistry. September, 1874.

Communications intended for publication, and books for review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London: or M. Hector Bossange, Lib. quai Voltaire, No. 11, Paris, will reach us safely and without delay.

All remittances of money and letters on the business of the Journal should be addressed exclusively to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

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- XVI. A Manual of Psychological Medicine, containing the Lunacy Laws, the Nosology, Ætiology, Statistics, Description, Diagnosis, Pathology, and Treatment of Insanity, with an Appendix of Cases. By John Charles Bucknill, M.D. Lond., F.R.S., F.R.C.P., Lord Chancellor's Visitor of Lunatics; and by Daniel Hack Tuke, M.D., Member of the Royal College of Physicians of London, etc. Third Edition. Revised, Illustrated, and much Enlarged. 8vo. pp. 824. London: J. & A. Churchill, 1874. 459

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

- XVII. Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Volume the Fifty-sixth. 8vo. pp. lxxviii., 492. London: Longmans, Green, Reader, & Dyer, 1873. 469
- XVIII. Saint Bartholomew's Hospital Reports. Edited by Dr. Andrew and Mr. Callender. Vol. IX. 8vo. pp. xlv., 258; x., 81. London: Longmans, Green & Co., 1873. 485
- XIX. Transactions of American State Medical Societies.
1. Transactions of the Kentucky State Medical Society, 1874. Nineteenth Annual Session. 8vo. pp. 263.
 2. Transactions of the Minnesota State Medical Society, 1874. 8vo. pp. 86.
 3. Transactions of the Medical Society of the District of Columbia. Nos. I. and II., April and July, 1874. 8vo. pp. 24 each.
 4. Transactions of the South Carolina Medical Association. Annual Session, held April 14th and 15th, 1874. 8vo. pp. 124.
 5. Transactions of the Medical Society of California during the years 1873 and 1874. 8vo. pp. 152.
 6. Transactions of the Eighth Annual Meeting of the Medical Association of the State of Missouri, April, 1874. 8vo. pp. 63. 495
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- XXI. Essays on Conservative Medicine and Kindred Topics. By Austin Flint, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine, in Bellevue Hospital Medical College, New York. 12mo. pp. 214. Philadelphia: Henry C. Lea, 1874. 505
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2. Clinical Researches in Electro-Surgery. By A. D. Rockwell, A.M., M.D., Fellow of the New York Academy of Medicine, Electro-Therapeutist to the New York State Woman's Hospital; and George M. Beard, A.M., M.D., Fellow of the New York Academy of Medicine, Electro-Therapeutist to the Demilt Dispensary. New York: William Wood & Co., 1873.	
3. Treatment of Nervous-Rheumatic Affections by Static Electricity. By Dr. A. Arthius. Translated from the French by J. H. Eldridge, M.D., Professor of General Therapeutics, Rush Medical College, Chicago. Chicago: W. B. Keen, Cooke & Co., 1874.	508
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ART. I.—*On the Local Treatment of Pulmonary Cavities by Injections through the Chest-wall.* By WILLIAM PEPPER, M.D., Clinical Professor of Medicine in the University of Pennsylvania.

It is not difficult to explain the recent revival of interest in the attempt to employ direct local applications in the treatment of phthisical cavities in the lungs. Undoubtedly it may be partly traced to the increasing familiarity and confidence in the use of delicate trocars and exploring needles in puncturing different tissues for purposes of diagnosis or for the removal of morbid effusions. But even more largely is it to be traced to the recent modification of medical opinion as to the nature and prognosis of certain cases of pulmonary phthisis. As far back as our knowledge goes, there have been occasional reports of recovery of cases of reputed phthisis, and many of the older authors freely admitted the possibility of such an occurrence. It is difficult for us to determine at the present time how far this belief was unfounded, or how far it was justified by the actual results of their practice. Our greatest difficulty in appreciating the value of such opinions lies in the simple fact that all clinical histories of thoracic disease, published before the introduction of percussion and mediate auscultation, and where the diagnosis is not verified by post-mortem examination, are hopelessly vitiated. No one, even at the present day, when the knowledge of ætiology and symptomatology is so precise, would pretend to diagnose, without the aid of auscultation and percussion, between empyema with or without pulmonary fistula, chronic pneumonia, bronchiectasis with copious purulent secretion, and pulmonary phthisis. All who have critically studied such essentially diverse conditions as these—and their number might readily be increased—must be aware how deceptively similar the general symptoms are in certain cases, and how entirely we fall back upon

the aid furnished by physical diagnosis. Yet it is in the face of this uncertainty as to the precise morbid condition present, that we are obliged to accept the conclusions of medical authors before the days of Avenbrugger and Laennec, drawn from their treatment of cases of chronic thoracic disease. I call particular attention to this point now, because it will be seen later that the historical discussion of the local treatment of pulmonary cavities has been confused by the introduction of much of this defective and unreliable evidence.

Following the more precise study of the signs and lesions of pulmonary diseases inaugurated by Laennec, and the diffusion of his brilliant but too exclusive theories upon tuberculosis of the lungs, the most despairing views were adopted as to the prognosis and curability of pulmonary phthisis, under the idea that all cases where cheesy deposits and yellow granulations occurred were to be regarded as essentially tuberculous and incurable. It would be presumptuous as well as out of place at present, to speak decidedly as to the nature of certain apparently distinct lesions frequently met with in the lungs. The results of modern investigation have carried medical opinion on this subject first in one direction, then in another, and the remarkable discussion upon tuberculosis held at the sessions of the London Pathological Society, during the past winter, may be taken as proof of the difficulty of definitely formulating our present knowledge of the nature and relations of the various lesions known as true miliary tuberculosis, cheesy infiltration, and fibroid degeneration. But though it is probable that Niemeyer and his immediate followers were extravagant in their views of the essentially non-tuberculous character of many cases of pulmonary phthisis, the clinical fact remains that in different cases of phthisis the morbid process presents vast differences, both in its vital tendencies and gross anatomical characters; in its rapidity of development, tendency to extension and diffusion, and influence upon the general health. The attempted classification of phthisis has also been derided on account of the signal want of success of any of the plans of treatment which were introduced in consequence of the modified theory of the nature of the disease. Undoubtedly no specific has been discovered, nor is it possible that one ever should be. Unfortunately, also, no new remedies or new modes of using old ones have been introduced which have sufficed to very materially change the former well recognized course of pulmonary phthisis. But still it would be most short-sighted to deny that the whole discussion has been highly serviceable to the treatment of this complex condition. It reawakened an interest and enthusiasm in the attempts to cure phthisis, which is already bearing fruit in a more judicious adaptation of remedies to special cases; and in a more extended study of the influence of diet, and especially of climate, upon the different forms of the disease.

The recognition of the importance of inflammation as a cause of many of the lesions met with in phthisical lungs, and the fact of some cases

depending in the early stage, if not throughout, upon an unhealthy low grade of inflammation of the lung tissue, led me, so far back as 1867, to begin the consideration of the possibility of applying directly to the seat of the disease some of the alterative agents which prove so effectual in the treatment of analogous inflammatory states of external tissues. After passing in review the various modes by which this might be accomplished, I concluded that it could be most safely and satisfactorily done by passing a very delicate canulated-needle through the intercostal tissues into the diseased area, and injecting suitable fluids directly into the affected tissue. I began this mode of treatment of cases of pulmonary vomicae in February, 1874 (*Phila. Med. Times*, March 14, 1874), and a few weeks afterwards received the number of the *Berliner Klinische Wochenschrift*, October 27, 1873, containing an account by Prof. W. Mosler, of Griefswald, of several cases treated in a somewhat analogous manner.

I have already spoken of a recent *revival* of interest in this question, but in reality the local treatment of vomicae in the sense in which the term is here employed and in the manner which will be fully detailed, has never been attempted, so far as I am aware, until very recently. As this question has, however, given rise to some discussion, it may not be without interest to consider the following points:—

1st. The history of the direct local treatment of pulmonary cavities by thoracentesis.

2d. The indications it is designed to meet.

3d. The more recent methods proposed.

4th. The dangers and disadvantages of such treatment.

5th. The clinical results of this mode of treatment.

It is extremely difficult either to confirm or disprove the statements made that Hippocrates recommended puncturing pulmonary cavities. In very many places in the Hippocratic writings (both in those which are undoubtedly genuine, as well as in those which are plausibly attributed to some writers of the Cnidian school) we find mention made of empyema, of its diagnosis, terminations, and mode of treatment, in which paracentesis thoracis always has a place. In some instances the language used in describing the cases of so-called empyema is such as to have led the eminent scholar Littré (*Œuvres Complètes d'Hippocrate*, tom. ii. p. 97) and Francis Adams, the editor of the Sydenham Society edition of the genuine works of Hippocrates, to doubt whether this term was not sometimes used to denote phthisical cavities. The conclusion to which I have myself been led is that the cases of paracentesis referred to by Euryphon of Cnidos, by Hippocrates, Galen, Aëtius, Avicenna and Avenzoar, and by Rhazes, were performed for the relief of empyema. Owing, however, to the absence of any reliable diagnostic symptoms, it may be that in some instances pneumonic abscesses or even tuberculous cavities were punctured. It appears unlikely, however, that this latter lesion is intended

in their descriptions, since, as a rule, the operation is directed for the evacuation of a collection of pus, and very frequent mention is made of the external appearances which indicate the approach of the pus to the surface by ulceration of the intercostal tissues. So far as an analysis is permitted of the clinical histories of such cases they would seem to refer rather to the development of pyothorax than of pulmonary phthisis. It may at least be safely concluded that none of the older physicians designedly recommended or practised thoracentesis in cases of phthisical cavities in the lungs.

Still less can we determine from the writings of authors during the middle ages that this operation was ever performed at that time. Paracentesis, even for clearly recognized pyothorax, was almost abandoned: it being scarcely admitted, according to Trousseau (*Clinical Medicine*, Syd. Soc. Ed., vol. iii. p. 207), that there were any cases, except those of surgical lesions, in which the operation ought to be performed. Ullersperger, in his treatise on the curability of phthisis (*Die Frage ü. d. Heilbarkeit der Lungenphthisen*, Würzburg, 1867, p. 234), affects to regard the puncturing of tuberculous cavities as a mere form of paracentesis for empyema, and quotes without hesitation, but without any proof, a list of nearly-forgotten writers as having performed it. So far, however, as can be inferred from their imperfect descriptions, there seems little doubt that the operations were performed for the relief of ordinary cases of empyema.

Coming to more recent times, when thoracentesis had regained favour and was made the subject of numerous treatises, we find Baglivi, in 1696, using the following language:—

“A phthisick arising from an ulcer is commonly branded as incurable, upon the plea that the ulcer is internal and occult, and cannot be cleaned like other external ulcers. But why do they not make it their business to find out the true situation of the ulcer, and make an incision accordingly, between the ribs, to the end that proper remedies may be conveyed to it? For my part, I know no reason why that should be neglected. About seven years ago, when I was at Padua, a man received a wound in the right side of his breast, that reached to his lungs, and, employing an able surgeon, had an incision made between the ribs to the length of six fingers’ breadth, in order to discover the situation of the wound in the lungs, which was perfectly cured in two month’s time, with vulneraries applied with tents and with syringes. Now practitioners ought to use the same piece of diligence in curing a phthisical ulcer in the lungs, lest the scroll of incurable diseases should grow too long, to the infinite disgrace of the profession.”—*Practice of Physick* (English trans.), 2d edition, London, 1723, p. 301.

This is referred to by Ullersperger (*loc. cit.*), and is quoted in full by Hutchinson (*Phila. Med. Times*, May 30, 1874, p. 548), in a critique upon my former article on this subject, with the following comment: “We have sufficient evidence in the above that the propriety of establishing a communication between the lungs and the outer air through the walls of the chest, for the purpose of applying remedies directly to the seat of disease, in cases of phthisis, was entertained as early as the seven-

teenth century." Unquestionably credit must be given to Baglivi for the suggestion that such a procedure should be employed; but the very terms in which he advocates it sufficiently imply that its propriety was not entertained by physicians, while with himself it appears to have been a mere speculative idea, which he never attempted to carry out. As to the case which is so briefly narrated by Baglivi, it seems difficult to form any clear idea of the condition actually present. It can hardly be credited that an incision not less than four inches in extent was made down to the surface of the lung soon after a penetrating wound of the thorax. The favourable results often observed in such cases when the wound is quickly closed and the case trusted to nature, would render such an operation most improper. If pneumothorax did not already exist, it would certainly be induced. More probably the case was one of limited pleural abscess or empyema following a penetrating wound of the thorax. Many cases of this kind, treated in the same way and with equal success, are to be found in even older writings than those of the learned Baglivi.

A much more valuable contribution to this subject was made by Barry (*Treatise on Consumption*, 2d edition, London, 1727, p. 267), also quoted by Ullersperger and Hutchinson, who describes carefully the anatomical relations of phthisical cavities, pointing out especially that there is generally close adhesion between the pleuræ over their seat, so that an incision might be made into them without danger or difficulty. In his first publication, after discussing the operation with remarkable clearness, he says: "'Tis most certain that many phthisical persons may by this means be preserved, that will otherwise unavoidably perish. If the operation be rightly performed, there is great reason to expect success, neither if it fails can it be attended with any very great danger, or much contribute to hasten their fate." He adds, as another advantage of the operation, that "the ulcer may be more easily cured by deterging and healing injections." In his later publication (*Treatise on the Three Different Digestions*, etc., London, 1763, p. 360 *et seq.*), he repeats the same reasoning and advice, and gives several cases in which he had the operation performed. When we remember, however, that he had no better guide to direct him in his diagnosis than "to open the breast where the most frequent pain and oppression direct the situation of the ulcer," it is not surprising that it should appear doubtful, after a careful study of these cases (although accepted unquestioningly by Hutchinson), whether it was really a pulmonary cavity which was opened in a single instance. Certainly the clinical symptoms detailed are very unlike those so familiar in phthisis, and very similar to the phenomena of some cases of circumscribed empyema, in some instances opening into the lung tissue and partially discharging through the bronchi. Mosler refers to Barry's views as being without practical results, but this scarcely assigns to them their proper value, since not only did they lead Barry himself to attempt the opera-

tion, but it will be seen that more than a century afterwards they induced the performance of operations which anticipated, in many particulars, those of Mosler himself.

In the present century Richter (*Bemerk. ü. d. Lungensucht, in den gelehrten Götting. Anzeigen* 49. Stück v. 28. Marz., 1805, p. 481) recommends incising pulmonary cavities, and reports two supposed cases in which he operated successfully. In the first of these, redness, swelling, and fluctuation presented themselves in the fourth interspace, and an incision at this point gave exit to a large amount of pus, followed by recovery. In the second, the patient became phthisical after an attack of pneumonia. An incision was made over a spot where there had been fixed pain, fluctuation was detected, and $1\frac{1}{2}$ pounds of pus evacuated, after which the patient gradually recovered.

These may be taken as illustrations of a number of cases which have been published before or since, where it is difficult to doubt that, although the operator recommended the operation with the deliberate intent of evacuating a phthisical cavity, he had in reality to do with a simple empyema, or possibly a true pneumonic abscess, though this latter lesion is so rare that it can hardly have existed in any large proportion of the cases recorded. Such cases were published by Herff, quoted by Canstatt (*Spec. Path. u. Ther., von Henoch*, 3te. Aufl. 2 Bd. p. 687), but I have not been able to get access to the original account.

Ramadge (*Consumption Curable*, London, 1836), who wrote a treatise characterized by the most unbounded egotism and ignorance of pathology, in support of his method of curing phthisis by forced inhalation, reports several cases where thoracentesis was performed. In the first case, called by him "supposed consumption cured by paracentesis," slight swelling presented itself two inches beneath the left nipple, and the heart was dislocated to the right; an incision through the intercostal tissues gave issue to yellow pus with a quantity of air which rushed out with a hissing sound. Unquestionably this was a case of pneumothorax following an empyema which had partly discharged through the lung. In the second case, styled "Consumption cured by Paracentesis," the clinical history, the description of the operation, and the results of post-mortem examination all show that the case was one of chronic plastic pleurisy, with fibroid change in the apex of the right lung, and that the operator merely introduced a trocar through the fourth intercostal space into comparatively healthy lung tissue, without causing any serious results. In his fifth case he describes the operation on a patient with phthisis, who had a chronic abscess in the apex of the left lung, as follows:—

"A trocar was introduced between the second and third ribs, in a line nearly perpendicular with the left nipple; very little matter escaped, as I had expected, for my chief object in performing this operation was to insure the emission of the air, and thus effect a diminution of the cavity by the expansion of the inferior lobe of the left lung. I kept the punctured place open for

about ten days, by the introduction of a small piece of catgut properly secured externally; when, finding that the cavity became so contracted, through the encroachment made on it by a general pulmonary expansion, as to preclude all further escape of air, I withdrew it. About this time a catarrhal affection of the inferior lobe of the punctured side supervened. In less than two months my patient was able to go out, and had completely lost his phthisical symptoms. In less than two years after the operation he was in the enjoyment of excellent health, the only drawback being the existence of catarrh, to which he more immediately owes his recovery."

It is evident that in all of these cases the intention was to directly open pulmonary cavities, though it may be doubted whether, even in the last case, the end was obtained. Certainly the procedure, undertaken with a most mistaken object, cannot be regarded as having had the slightest influence upon the condition of the patient. In a brief article published nine years later, Dr. Herbert, a pupil of Dr. Ramadge, states that "within eighteen months, he has been present at seven such operations performed under Dr. Ramadge's direction, and has in no case seen them attended with any inconvenience or followed by disagreeable consequences." (*Lancet*, 1845, vol. i. p. 75.) Unfortunately, this appears to be the sole record of the cases, and although it is evident from this that Ramadge continued to puncture chests where he supposed cavities to exist, in order to "give exit to the air," and "induce expansion of the surrounding lung tissue," it is impossible to determine the real nature of the cases operated on or the results of the operation. It is certain that the arguments by which he supported his practice very naturally failed to attract attention or to induce others to follow his example.

In the year 1845, Dr. Hastings and Mr. Storks (*London Med. Gaz.*, 1845, vol. xxxv. p. 378), published an interesting and well-observed case of pulmonary phthisis, with a large cavity at the left apex which was opened by the latter by an incision in the third interspace. A piece of gum-elastic catheter was introduced and worn constantly from the date of the operation, November 15, 1844, to December 23, 1844, which is the latest detailed report of the case. Pus was discharged through the tube from time to time, and it is reported by Dr. Hocken (*London Med. Gaz.*, 1845, vol. xxxv. p. 481 and 509),¹ who conducted the subsequent treatment of the case, that the patient's general symptoms improved, with a diminution in the cough and amount of purulent secretion. A still later report is made by Dr. Hastings (*London Med. Gaz.*, 1845, vol. xxxvi. p. 767), who, writing six months after the operation, says: "Although very weak, the patient has latterly been able to get out when the weather has been fine. His expectoration for the last two or three months has not averaged more than two drachms in the twenty-four hours."

¹ These are the papers referred to by Mosler, under the name of Hocken, with statement that he had been unable to discover them.

These authors quote Barry (*loc. cit.*) as their authority for the operation, but do not seem to have ever heard of the publication of Ramadge.

It is certainly not a little singular that after this time, the subject appears to have attracted no attention whatever, and that the remarkable cases to which we have above referred, should have induced none of the many physicians specially engaged in the study of pulmonary diseases to examine into the value of this simple operation. With the exception of a courteous, but not convincing critique by Campbell (*Lancet*, 1845, vol. i. p. 675), no discussion appears to have been aroused, and the matter fell into entire forgetfulness.

It is not alluded to by Trousseau in the exhaustive history of Thoracentesis in his *Clinique Médicale*, nor by Walshe, nor Copland, nor even by Waldenburg (*Die locale Behandlung d. Krankh. d. Athmungsorgane*, Berlin, 1872). Canstatt observes merely, in referring to the recommendations of Herff and Hocken, that they will scarcely find many followers, since, apart from the uncertainty of the existence of pleural adhesions, the emptying of a cavity could have no beneficial influence upon a disease, which is usually characterized by the formation of several cavities, and which springs from a general diathesis. And Bennett (*Reynolds' Syst. of Medicine*, first ed. vol. iii. p. 589) briefly says: "pulmonary cavities have even been opened from without, and variously treated with the view of causing cicatrization, but all such attempts have been, what an intelligent consideration of the pathology of the disease might have anticipated, a uniform failure."

It is difficult to explain the almost entire failure of this operation to attract even the criticism of eminent observers. It is true that it had been by some recommended for objects which were evidently unattainable, and that the cases which were given in illustration of its successful performance were so inaccurately reported as to afford no sound basis for its repetition, although neither of these objections can be brought against the case reported by Hastings. More probably it was condemned by medical pathologists on the ground that it was directed only against a local expression of an incurable constitutional disease. And it is also quite possible that some unfortunate cases which have not been placed on record may have helped to bring it into disrepute.

Within the past few years we find several observers engaged in the study of this subject. Thus in 1873, Dr. Wilhelm Koch published (*Langenbeck's Archiv. f. Klin. Chir.*, 15te Bd. 3te Hft.) the results of experiments which showed that injections of dilute solutions of iodine might be made with impunity into the lung tissue of dogs; and suggested, in consequence, that this mode of treatment might be applicable to some diseases of the lungs in human subjects. This article seems to have attracted no notice, and was unknown even to Mosler (*Berl. Klin. Wochenschr.*, No. 45,

November 10, 1873, p. 542), at the time of publication of his article referred to below.

The attention of the profession was more forcibly attracted to this subject by Mosler of Griefswald (*id. op.*, October 27, 1873), who appears to have been ignorant that the operation had ever been performed, merely stating that "such a proposition was made by Barry in 1726, and renewed later by Masse, v. Herff, Hooken (*sic*), without, however, any practical results."

In two cases he simply punctured the cavity with a "tolerably large canula" which was permitted to remain. In a third case he operated very much after the manner of Storks (*loc. cit.*), by making a long incision (3 ctm.) along the upper border of the 3d rib, and then gradually opening the wall of the cavity with a suitable pair of forceps, and introducing a pretty large silver drainage tube; but in addition he conjoined the use of medicated injections through the canula directly into the cavity. In the first case, one injection of dilute solution of permanganate of potash was practised; in the second, five were employed; and in the third case, their use, as well as that of dilute solution of iodine and carbolic acid, was continued for some time. The particulars of this interesting paper (*American Journ. of Med. Sci.*, July 1874, p. 253), are so fresh in the minds of our readers as to render further allusion unnecessary. Suffice it to say that in none of the cases did the slightest ill result attend the operation or the subsequent injections, and that in the only instance in which the latter were employed continuously, there was a positive improvement in the pulmonary symptoms, although death occurred three months subsequently from albuminoid degeneration of the kidney and spleen, associated with disseminated miliary tubercles in the left lung.

In February of the present year I began to treat pulmonary cavities by injecting dilute solutions of iodine through a delicate canula, and have continued to do so until the present time with results that will be given in detail at the close of this paper. At that time I was unaware that the local treatment of phthisical cavities had ever been attempted before, and it will be seen that the method which I have used differs in several very important respects from any hitherto employed.¹

¹ The mere question of priority as to the idea of local treatment of pulmonary cavities seems to me very unimportant. In the London *Lancet* for March 28, 1874, Dr. Birkard states that he conceived this idea so long ago as 1872, and that lately he has injected a weak solution of carbolic acid through the thoracic parietes into the lung in a very bad case of phthisis. The injection seems to have been performed but once, and to have caused no inconvenience, but no details whatever are furnished. Prof. Mosler has been engaged upon the subject since the latter part of 1872. I have already alluded to my determination announced so far back as 1867: but Baglivi in 1696, although it is not probable that he ever carried it into execution, clearly expressed the suggestion that this local treat-

Before proceeding to speak of the actual results, so far as known, of the local treatment of phthisical cavities, it is proper to allude briefly to the indications which may be thought to present themselves in favor of this method, as well as to the objections which have been advanced, against it.

It is very easy to overstrain the argument which is often drawn from the unfavourable nature of a disease in support even of the most unpromising plans of treatment. And yet, in the present discussion, it is but fair to bear in mind that the treatment proposed is for a condition which is universally conceded to be usually a mortal one. It is true that, in the earlier stages of phthisis, even after the general symptoms and physical signs positively indicate organic disease of the lung tissue, recoveries are not rarely observed. But after a cavity of considerable size has formed, even though it be single, the remaining lung tissue healthy, and the constitutional disease inactive, the course of the case is generally downward.

Pollock, in his masterly memoir on the *Elements of Prognosis in Consumption*, says :—

“The cure of cavity in the lung has long been a vexed question. I presume there is now no doubt in the minds of the most experienced observers that cavities close and heal up. If the cessation of all the physical signs of such a lesion, and the perfect restoration of health, be considered evidence sufficient, there are cases enough of this kind on record by good authorities to justify the opinion that this form of cure is possible. But all agree that it is not frequent; and its infrequency must be apparent from the facts that, out of an experience of 4530 cases, most carefully noted at the Hospital for Consumption by myself personally, I can only place on record 68 cases of well circumscribed cavity, with 13 presenting the characters of ‘retracted cavity,’ in all 81 instances in which the patients seemed progressing towards a cure of cavity.”

It will probably be the experience of most observers that, although 1.8 per cent. of patients with circumscribed cavities of considerable size may for a long time *seem progressing* towards a cure, a far less proportion will actually enjoy entire recovery.

The dangers which surround a patient with a pulmonary cavity are indeed serious. There is, in the first place, the risk of hemorrhage which, though rarely directly fatal, is often profuse. Granting also that the original disposition to tuberculous deposition has been expended, or that the cavity has proceeded from a non-tuberculous ulcerative process, recent observations have demonstrated the great danger of secondary constitutional infection and the development of miliary tuberculosis in cases where there are long-standing centres of softening caseous infiltration or of unhealthy suppuration. It should also be remembered, that, under the most favourable circumstances, patients with lung cavity are constantly in a state of feeble vitality, sufferers from harassing cough and dyspnoea on exertion,

ment was feasible. The only merit in question seems to me to be in connection with the actual demonstration of the feasibility and clinical value of making local applications by thoracentesis to lung cavities, the determination of the best manner of doing this, and the decision as to which cases are best suited for such treatment.

and liable to dangerous intercurrent attacks. Unfortunately, in the vast majority of cases we also find evidence that the diseased action is invading the lung tissue surrounding the cavity, and that the morbid process shows little tendency to become circumscribed.

The objects which have been sought by the ordinary methods of treatment in such cases, have been to remove the constitutional diathesis, to disinfect the discharge from the cavity, to check the paroxysms of cough, and to alter by counter-irritants, internal remedies, and inhalations, the morbid action in the walls of the cavity.

So it will be observed that the objects proposed by the authors who have recommended opening the cavity, are similar in character. It is true that Ramadge (*op. cit.*) advocated the operation with the curious notion that, by insuring the emission of the air, he could effect a diminution of the cavity by the expansion of the remaining portion of the lung, bringing the surfaces of the cavity into contact, so that they would unite and cicatrize. But Barry, in 1727 (*op. cit.*), recommends forming an artificial opening into the cavity, in order that the matter may be readily and completely discharged, and that, by thus avoiding the necessity for violent paroxysms of cough, the diseased part may be kept more at rest, while, at the same time, suitable detergent injections may be employed. So, too, Hastings and Storks (*loc. cit.*) performed this operation with the same objects in view, and, as has been seen, endeavored to secure them by leaving a piece of gum catheter in the wound, so as to maintain the direct communication between the cavity and the external air. One of the results obtained, then, by this operation, as performed by Storks and repeated recently by Mosler, is a certain degree of rest for the walls of the cavity and the tissue immediately surrounding. It is of course evident that, as the cavity will freely communicate with the air, both by the bronchial tubes and by the canula, its walls will still be subjected to ordinary atmospheric pressure which will suffice to prevent any marked collapse of the cavity. But, on the other hand, as the air which enters from the bronchi during inspiration can immediately and freely escape, it will be found that the respiratory movements of the lobe containing the cavity become much diminished. In addition to this, the regular and free discharge of the purulent secretion of the cavity through the canula, will, as would be anticipated, and as has been shown by experience, lessen the frequency and severity of the cough. In rare cases, the communication of the cavity with the bronchi is such that the pus which forms readily passes into the air-tubes and is expectorated with ease. But most frequently, the process of emptying a cavity by cough is a wearisome, painful, and injurious one; and, as the paroxysms are often excited by eating and drinking, it is by no means rare to have such frequent vomiting from this cause as to seriously interfere with nutrition. It can scarcely be doubted that the avoidance or mitigation of this violent cough, and the comparative rest given

to the cavity, would favour cicatrization of its walls and tend to prevent its extension.

The other advantage which is gained by this mode of operating (inserting a comparatively large canula) is the power of disinfecting the contents and walls of the cavity by injections. Although mention is made by some of the earlier writers of the use of detergent applications, it cannot be shown that such injections into lung cavities were really employed before their use by Mosler. It appears to me, however, that this author has attached undue importance to the mere disinfection of the secretion of the cavity as compared with the modification of the morbid action in the wall of the cavity itself. The opportunity of endeavouring to bring about such a modification is, indeed, to my mind, the greatest advantage derived from this operation. It can be effected when a canula has been allowed to remain in the opening by injecting directly into the cavity a suitable amount of such dilute solutions as may seem proper. Mosler introduced weak solutions of iodine and carbolic acid in one of his cases by atomization, but appears to have aimed chiefly at the disinfection of the contents of the cavity. Up to this time, I have limited myself in the local treatment of phthisical cavities, to the repeated injection, through a delicate canulated needle, of small amounts of solutions of iodine of various strengths, the canula being introduced into the cavity at the time of each injection and immediately withdrawn. As thus performed, of course the operation does not affect the relations of the cavity to the external air, nor does it in any way facilitate the escape of the secretion. The sole value of such treatment must then depend upon the question whether we are able to modify beneficially the morbid action on the surface of pulmonary cavities and in the surrounding diseased lung tissue. Dr. Hutchinson (*loc. cit.*), in speaking of this point, says:—

“Moreover, the opinion that injections may be of service in the treatment of phthisis rests, we think, upon a mistaken therapeutic basis. In certain conditions of the serous membranes, they are unquestionably useful by exciting inflammation, but a little reflection will convince any one, who has abandoned in whole or in part the theory which makes phthisis the result of tubercular deposit, that this is the very last thing to be desired in the disease. The object aimed at in the management of phthisis, and especially in those local cases in which Dr. Pepper thinks the injections are most likely to be useful, is to allay inflammatory action, not to excite it. We therefore are unable to see how they can be productive of any good; on the contrary, if they light up an inflammatory process in the walls of the cavity, this will be very likely to extend to the circumjacent tissue, and thus the disease, which may have been previously held in abeyance, be roused into activity.”

We must remember, however, that the terms *allaying* and *exciting* inflammatory action are purely relative ones, dependent upon the grade of morbid activity present. It can hardly be thought desirable, in a case where a caseous pneumonia is rapidly degenerating and breaking down in the centre, to attempt to *allay* the morbid action. It is probable that our best chance of preventing the ulcerative destruction of the whole af-

affected area would be, if it were possible, to apply a sufficiently powerful stimulus to *excite* a more healthy degree of cell action in the least affected parts, so that we might induce the development of fibro-cellular tissue, and thus limit the morbid process. We are perfectly familiar with the necessity and practical rules for graduating the stimulant or sedative characters of applications to external ulcers; and know well that there are many cases of unhealthy destructive ulceration which are most relieved by powerful alterative stimulant applications. There is a wide difference in the action of such substances when applied to the seat of the disease, and when applied to the surrounding healthy tissue; and applications which are most useful when made directly to a phagedenic ulcer, might, if made to healthy tissue in the neighbourhood, excite destructive ulceration.

So, too, with regard to circumscribed cavities, which are often lined with a layer of granulation-tissue which is constantly the seat of the formation of pus—the so-called “pyogenic membrane”—it is perfectly conceivable that some application might be made which would not *allay* the inflammatory action there, but *excite* a more healthy action by its alterative stimulant effect, and thus lead to a diminution of secretion, and a progressive contraction and cicatrization of the cavity.¹

It is evident of course that the analogy between ordinary external ulcerations dependent on local causes, and ulceration of the lung tissue, must be drawn with great caution. It is the most hopeless feature of the latter that it is so frequently dependent upon a profound alteration of general nutrition, and that it is so apt to be associated with the presence of specific tuberculous formations in the lungs. Undoubtedly, therefore, in cases where the constitutional diathesis is marked, and the cavity is associated with diffused disease of the lung tissue, no one would think of undertaking a special treatment for the cure of the cavity. But, on the other hand, we meet with many cases where, without raising the question of their relation with tuberculosis, the constitutional affection is at a minimum, and the pulmonary disease is comparatively circumscribed, consisting of a cavity, secreting pus, and surrounded by more or less fibroid induration or cheesy infiltration of the lung tissue. We are familiar with the dangers in such cases—of gradual exhaustion, of hemorrhage, of progressive extension of ulceration, and of secondary infection of the constitution—and I can conceive of nothing more desirable in practical medicine than to be able to modify

¹ Dr. Hutchinson alludes to the development of connective tissue, “the effect of which will be to enlarge and keep open the wound made by the aspirator or trocar, and thus to allow the escape of the contents of the cavity into the pleural sac whenever this is not prevented by close adhesions.” I cannot discover the force of this objection. The opening made by a delicate needle is so minute that it can scarcely allow the escape of any fluid, and if there are any cases of phthisis where pleural adhesions are sure to exist, they are precisely those where there is a marked development of fibro-cellular tissue in the lung.

the action of the inner surface of such a cavity, to check the amount of purulent discharge, and thus favour its gradual cicatrization and contraction. Under the most unfavourable view of the essential nature of such lesions, I can conceive of no objection to such an attempt, provided it can be made with safety ; and when we are in possession of a method by which this can be effected, it seems to call for a patient and extended trial. In considering carefully the clinical histories of cases where lung cavities have undergone cure, it will be found that so long as active secretion of pus takes place from the seat of disease, with violent paroxysms of cough, there is little progress towards cure. But as the ulcerated surface heals, there is a development of fibro-cellular tissue around the cavity which continually tends to contraction. The discharge diminishes and the cavity is less frequently subjected to the violent distension occasioned by severe coughing. The chest-walls over the site become depressed and retracted, the heart is displaced *towards* the affected spot, partly by the traction of the contracting lung, partly by the pressure of the opposite lung, which undergoes compensatory hypertrophy and encroaches more and more upon the mediastinal space. It is thus seen that the phenomena which attend the cure of a lung cavity are similar to those with which all are familiar as marking the cure of a chronic pleurisy where the lung is so bound down by adhesions as to be unable to expand. And it will be noted that, in the cases reported in this article, the improvement in the cavity is attended, and to a certain extent measured, by the development of these phenomena of compensation.

I have already said that the most important object sought by this local treatment of lung cavities seemed to be this very modification of the morbid action of their lining surface ; and it is on this account that the mode of treatment suggested in my former paper appears to me preferable to the operations of Storks or Mosler, although by these a free escape of the discharge from the cavity is secured, and its walls are more immediately afforded rest. It enables us to bring any desired amount of an appropriate solution in contact with the inner surface of the cavity, or with any part of its wall ; while at the same time it is entirely free from the objection of maintaining local mechanical irritation, such as might result from the prolonged presence of a canula. In order to show how simple a mode of treatment it is, and at the same time how well calculated to fulfil the chief indication we have laid down, I will ask attention to a brief description of the manner in which I have carried it out during the past six months.

The cavities which have hitherto presented themselves for treatment have been in the upper lobe, so that all of the punctures which I have as yet made have been in the first, second, or third interspace. The point selected has been that at which the physical signs of a superficial cavity have been most intense. As a rule, the punctures have been made in the line of the nipple, although recently in two cases, owing to the increasing

contraction of the cavity and development of fibroid tissue, it has been necessary to select points half an inch inside or outside of the nipple line.

The apparatus consists simply of a very delicate steel canulated needle, like the finest hypodermic needles, but about three inches in length, and an ordinary hypodermic syringe capable of holding twenty-five minims. In my first experiments I used an aspirator, but as the withdrawal of any pus is not contemplated, it is in every way preferable to employ the more simple apparatus above mentioned.¹

In order to diminish the pain caused by the puncture, I have always employed local anæsthesia by freezing, and with this succeed in effecting the treatment without causing a murmur of complaint. Occasionally small filaments of nerves have been pricked, and have caused tingling, radiating pain, lasting for a few moments. The injections have been given while the patients were in a sitting posture, and I have usually directed a full breath to be taken before the puncture is made, and to be held during the injection. The time occupied by each injection does not exceed thirty seconds. The depth to which it will be necessary to introduce the needle will vary, of course, in different cases; in the injections which I have myself made, I have introduced it from one and a half to two inches. With a very little care the ribs can be avoided; and a reference to the anatomical distribution of the nerves and vessels in the thoracic walls will always enable the puncture to be made so as to avoid them. The only fluid which I have as yet injected into lung cavities, has been dilute liq. iodinii comp. In the earlier injections, this was used very weak ($\text{m} \text{iv}$ to $\text{f} \text{3j}$), but for some time past I have increased it to $\text{m} \text{xij}$ in a fluidrachm; the quantity has also been gradually increased from four to twenty-five minims for each injection. The entire absence of any signs of irritation assures me that, if it were desirable, larger quantities of stronger solutions might be injected. The results of injections of iodine have been so satisfactory in the limited number of cases in which I have employed this mode of treatment, that I have felt indisposed to use any other substance. But it is highly probable that other solutions, alterative, astringent, or antiseptic, may be found preferable in some cases. Unmistakable evidence of the entrance of the iodine into the air-passages has frequently been secured by the immediate perception of its pungent peculiar taste by the patients. I need only add that hitherto the injections have usually been made once a week on an average; and that, of course, every detail of internal treatment and dietetic and hygienic care has been continued, as far as practicable in hospital patients.

It remains, before giving the actual results of this method of treatment, to examine briefly what dangers and disadvantages attend it. We trust,

¹ Indeed, I believe that the use of the aspirator is not without danger, as the powerful suction brought to bear on the inner surface of the cavity may cause hemorrhage. (See Case IV.)

in the first place, that we have succeeded in showing that, *if the operation itself be free from danger*, there are clear indications which demand for it a full, fair trial. We are led to say this, by clinical experience and theoretical reasoning, even though so careful a thinker as Dr. Hutchinson believes "that it is not likely to result in good to the patient;" or though Dr. J. Hughes Bennett thinks the results of all operative treatment in phthisis to be "what an intelligent consideration of the pathology of the disease might have anticipated, a uniform failure."

Mosler believes that he has demonstrated that "the local treatment of lung cavities can be effected" even by the comparatively serious operative method he employed; and I do not see how his statement can be impugned. But as there are radical differences between his method and the one which I have hitherto employed, I shall limit myself to the objections which may be brought against the treatment of lung cavities by repeated injections through the chest-walls, effected by a delicate needle.

And first, with regard to the effects of the puncture itself upon the pulmonary tissue through which the needle passes in order to reach the cavity. In the cases where this mode of treatment would seem to be indicated, the cavity is usually very superficial, and is separated from the pleura only by a wall of firm fibroid tissue. It would be almost impossible, I conceive, for the mere passage of a delicate needle through this tissue to excite any injurious action. At times, however, the cavity is separated from the surface by a layer of lung tissue in a state of cheesy infiltration. In order to determine the influence of a puncture in such a condition, I made the following observation:—

CASE I. Hæmoptysis, followed by Phthisis; Rapid Extension of Disease; Repeated Injections of Iodine into a Spot of Caseous Infiltration; Death from Exhaustion; Autopsy.—John D., æt. 29, a teamster, entered the Philadelphia Hospital March 11th, 1874. Has had scrofulous supuration of cervical glands, and has also had syphilis. In June, 1873, had severe hæmoptysis, whilst doing some heavy lifting, and this was followed by cough. In December, grew worse, with increased cough, pain in left side, and hoarseness. In February of the present year, began to lose flesh and strength rapidly. In April, he began to suffer with intense hectic fever, exhausting night-sweats, and frequent cough; his emaciation and prostration were extreme, and he was confined to bed. Pulse frequent, feeble, and markedly dicrotic. Physical examination showed consolidation of left lung throughout, with moist crackling over upper lobe. On right side, there was dry crackling at apex.

May 8. Condition rapidly growing worse. As it seemed impossible to arrest the disintegration of the left lung, it was determined to try the local effects of injections of iodine upon the lung when in a state of caseous infiltration. Accordingly m. viij of dilute Lugol's solution (1 pt. to 6 of water) were injected, the needle being introduced to depth of one and a half inch in the second interspace. The puncture caused no symptoms whatever.

10th. Same injection repeated.

11th. Pulse not dicrotic; he seems slightly stronger.

15th. Same injection repeated.

21st. Has same injection repeated. Has again begun to sink.

24th. Disintegration of left lung advancing. Same injection repeated.

29th. Death occurred from progressive exhaustion.

At the *autopsy*, disseminated tuberculosis of the right upper lobe was found. The left lung was in a state of caseous infiltration throughout. At several spots, puriform softening was beginning; this was further advanced at posterior part of the apex, where the disease seemed oldest. A very careful examination of the points where the injections had been introduced was made; but there was no trace left to indicate them. The portion of lung into which the needle had been introduced to the depth of over an inch was thoroughly consolidated, and remained quite firm. There was no staining of this area with iodine. The pleuræ were adherent over the whole upper lobe. No trace of the passage of the needle through the intercostal tissues remained.

It will be seen, therefore, that in this case five injections of dilute Lugol's solution were made at short intervals into a lung in a state of caseous degeneration, and that the iodine introduced was completely absorbed by the tissue, while there was not a trace of any mechanical irritation from the punctures, either in the intercostal tissues, the pleuræ, or the lung tissue itself. The results of this case have an important bearing upon the possibility of directing local treatment to superficial circumscribed indurations or caseous infiltrations of the lung tissue; but, for our present purpose, I would simply call attention to the fact that they agree with our reasonable anticipation, and with the results of clinical experience, in showing that the passage of a delicate needle through a layer of infiltrated lung tissue can be effected repeatedly without injurious consequences.

Finally, it may happen that the cavity is separated from the chest-wall by a thin layer of healthy lung tissue. It is frequently possible to decide as to the existence of such a stratum of vesicular tissue by careful percussion and auscultation, and I should be inclined to regard the presence of a demonstrable amount of healthy tissue between the cavity and the thoracic wall as a contraindication against the operation. Still, it has been demonstrated frequently (by Bretonneau, Velpeau, Koch, myself, and others) that puncture of the lungs with a delicate needle may be safely performed in the lower animals. Our knowledge of the results of penetrating wounds of the lung would lead us to expect little injury from the minute puncture effected by a delicate needle; and finally, it has been shown by some of the advocates of acupuncture that fine needles may be introduced even to a depth of two inches¹ into the healthy human lung, without any injurious effect.

As to the danger of hemorrhage, in the second place, all experience goes to show that it is very slight, even if it exists at all. Dr. Hutchinson (*loc. cit.*) states, "in one of the cases reported by Dr. Pepper a slight hemorrhage fol-

¹ Memoir on Acupuncturation, by Morand, translated by Franklin Bache, Phila. 1825, p. 65.

lowed the introduction of the aspirator; and the same accident occurred in the operations done by Dr. Mosler and Dr. Hastings." In Dr. Mosler's case, however, the statement is distinctly made in the account of the operation that "no hemorrhage occurred." Ten days subsequently a hæmoptysis occurred, and was soon checked by astringents blown through the canula. As the patient is stated to have already had several similar attacks before the operation, the last one can hardly, with fairness, be connected with the treatment. In Mr. Storks's account of the operation on Dr. Hastings's patient (*loc. cit.* p. 384), the only mention of hemorrhage is, that "the patient brought up two or three drachms of blood which had escaped into the cavity." It will be remembered that in this operation a long incision was made through the skin and muscles, and the wall of the cavity itself was opened to the extent of an inch, so that a good deal of blood must have flowed.

The trifling hemorrhage referred to as occurring in one of my own cases, took place the very first time I introduced a needle into a lung cavity. I am satisfied that it was connected with the effects of aspiration (for I was employing a Dieulafoy's aspirator), since it has never happened to me again to have the slightest hemorrhage caused, although I have repeated the punctures about twenty-five times upon the same patient, and not less than forty times more in various other cases. It will be further remembered that the puncture only involves the superficial layer of the lung where there are no large vessels, and is called for only in conditions of the lung-tissue where many of the bloodvessels are obliterated. I feel myself justified, therefore, in repeating "that the danger of serious hemorrhage is but slight, if the puncture be carefully performed" (*loc. ant. cit.*).

Thirdly. It has been objected that it is impossible to determine whether adhesion exists between the pleuræ over the seat of the cavity, and that consequently there is danger of allowing the escape of the contents of the cavity into the pleural sac, with the development of pleurisy or pneumothorax. It is true that in rare instances a lung cavity ruptures and gives rise to pyo-pneumothorax; but I believe all authorities will support the statement that for all practical purposes it may be assumed that there are adhesions over every chronic circumscribed superficial lung cavity. Not only so, but there is every reason to believe that, while the passage of the needle itself would, at the most, excite a slight localized plastic pleurisy if the membranes were healthy and non-adherent, the minute puncture of the lung would not give exit to any amount of air or pus capable of causing trouble.

It must be remembered, in performing this simple operation, that it is possible to wound either a vessel or a nerve by failing to regard the anatomical distribution of these structures. Of course it would be necessary in puncturing the chest at any point, just as in ordinary paracentesis, to bear in mind the course of vessels or nerves over that particular region.

In the treatment of lung cavities it will be found that the great majority of punctures require to be made in front, in the three upper intercostal spaces. By keeping as far inward as the nipple-line there is no artery or nerve of any importance exposed to injury. If, however, the position of the cavity should require the puncture to be made much external to this line, it would be desirable to introduce the needle as near the lower border of an intercostal space as it is safe to go without risking any injury of the intercostal artery. I think it probable that if the needle be advanced gradually, a small artery or nerve would be pushed aside and not trans-fixed. Certainly no accident of the kind has happened in my own experience, extending now over sixty-five punctures. Several times patients have complained of tingling pain shooting down the arm on the affected side, evidently from pricking of some little nervous filament of one of the thoracic branches of the nerves of the brachial plexus. But this pain has always been slight and very transient. In no case has there been the slightest hemorrhage into the tissues of the thoracic wall, or any evidence of irritation caused by the repeated punctures. I append the result of this treatment in the cases of this character in which I have so far employed it.

CASE II. (Case II. in former communication.) *Chronic Phthisis; cavity at left apex, with disease of the lower lobe; repeated injections; temporary improvement; extension of disease; diarrhoea; death.*—John Wilson, æt. 35 years, a Finn, came into the Philadelphia Hospital February 7, 1874. Of a phthisical family, he had had symptoms of lung trouble for nearly three years. For the past three months there had been much acute pain over the left apex, and his other symptoms had been aggravated. He was emaciated and feeble. Physical examination revealed no positive disease on the right side. On the left side there was consolidation of the apex, with a superficial cavity extending from the first interspace to the fourth rib. There were also large and small bubbling râles over the rest of the lung anteriorly and laterally, with some weakness of the respiratory murmur. Posteriorly, above the spine of the scapula, loud bubbling râles were heard; and below, fine mucous râles. He was placed on use of cod-liver oil.

March 8. A delicate needle, attached to an aspirator, was introduced into the cavity to the depth of $1\frac{3}{4}$ inches through the second interspace. A few drops of sanious fluid entered the vacuum, and \mathfrak{m} vij of dilute Lugol's solution were injected. The operation did not cause cough or hæmoptysis, and was followed by no pain, acceleration of pulse, or elevation of temperature.

10th. A delicate canulated needle, with an ordinary hypodermic syringe attached, was passed into the cavity, and \mathfrak{m} xxv of dilute Lugol's solution ($\frac{1}{8}$ strength) were injected. The operation caused neither pain nor cough, and was followed by no irritation or elevation of temperature.

15th. Seemed brighter, and stated that he had been feeling better since the last injection. The cough certainly had been less troublesome. Again injected \mathfrak{m} xvij of same solution. Careful attention was paid to internal treatment and arrangement of diet.

22d. Injected \mathfrak{m} xx of same solution. Appeared to be improving.

A few days after this he felt so much relieved that he insisted upon going out of the hospital to attend to some business. While absent, a violent

storm occurred; he was much exposed, had a slight hemorrhage, severe pain at base of left chest, and on his return on April 3 he was much worse, with increase of cough and expectoration, continued pain and friction-sound at infero-lateral part of left chest.

A blister was applied over this spot, and he was placed upon use of quinia, digitalis, and opium.

For a few days there were evidences of some serous effusion in left pleura; but after this disappeared, coarse friction sound, with signs of rapidly developing consolidation of the lung, made their appearance. There was high hectic fever, and the loss of flesh and strength, which had before appeared to be checked, recommenced. Evidences of disease at the right apex soon made their appearance, and he began to suffer with diarrhœa, which was checked by opium and bismuth.

May 8. The signs of disintegration of the left lung advancing, another injection of dilute Lugol's solution was made into the cavity.

15th. He began to have blood-tinged expectoration, and was ordered vin. ergotæ in fluidrachm doses, and $\text{m} \text{vj}$ of dilute Monsell's solution were injected into the cavity.

24th. Disintegration of the lower part of the left lung still progressed. Injected $\text{m} \text{xx}$ dilute Lugol's solution into the cavity. Contraction of the upper part of left thorax had become more marked, and the heart was displaced upwards and to the left.

30th. Diarrhœa returned, and proved very difficult to control, causing extreme prostration. Soon after the discharges were controlled, increased hectic, cough, and expectoration appeared.

July 30. Since last note the condition of this patient has fluctuated, but on the whole has become worse. No further injections have been made. The cavity *appears* to be somewhat contracted, but the disease of the remainder of the lung and of the right apex has progressed so rapidly as to indicate a speedy termination.

August 14. He continued to sink, and died to-day, worn out with protracted diarrhœa.

At the *post-mortem* the *right* lung was found enlarged, tightly adherent over the upper lobe. On section, the whole of this lobe was in a state of cheesy infiltration, with several points of softening. Scattered through the middle and lower lobes there were crude yellow granulations. The anterior border encroached greatly on the mediastinal space. The *left* lung was much contracted, and throughout tightly adherent by dense white fibroid tissue, which formed a complete casing for the lung. On careful examination of the area through which the punctures were made, it was impossible to detect any trace of the passage of the needle. An incision was made into the upper lobe, which was almost entirely occupied by an anfractuous cavity. The anterior wall of the cavity was largely composed of pure fibrous tissue in places varying from $\frac{1}{2}$ to $\frac{1}{8}$ of an inch in thickness, with a small amount of lung tissue in a state of fibroid induration. The cavity was divided into sacs by various imperfect septa. The largest of these sacs lay upon the anterior part of the lobe with a fibroid wall not more than $\frac{1}{8}$ inch in thickness, and had been entered by the various injections. The lining membrane of this sac throughout was smooth, shining, and whitish, and entirely free from any cheesy formation. In other parts of the cavity there was a small amount of cheesy matter adherent to the walls. There was very little secretion in the cavity. The lower lobe was in a state of mixed fibroid and cheesy induration, with

here and there small centres of softening. The pericardium was tightly adherent to the concave surface of the left lung. The pericardial sac contained 8 ounces of turbid serum, but there was no appearance of inflammation. There were a few milky spots on the pericardium. The bronchial glands were greatly enlarged and in a state of cheesy degeneration. There was extensive ulceration of small intestine, and to a less extent, of the large intestine. The liver was fatty.

In this unfortunate case the injections were undertaken rather with the negative view of demonstrating their harmlessness than with any definite expectation that they would prove serviceable. The symptoms for three months before the patient came under observation indicated a rapid progress and extension of the disease, and when first examined, it was found that the entire left lung was hopelessly involved. Still the repeated attacks of pain which had been experienced about the left apex made it almost certain that the pleuræ were adherent over the seat of the cavity. And in fact it resulted that the injections which were practised (seven in all) did not cause the slightest irritation nor leave any trace that could be detected on post-mortem examination. The course of such cases is altogether too irregular to allow the slightest significance to be attributed to the temporary improvement which followed the first four iodine injections. It is true that the portion of the cavity into which the injections were directly thrown, presented an unusually favourable appearance, but no distinct contraction could be detected. All that can be safely deduced is that they were perfectly tolerated, and that they might have been safely continued had not the progress of the disease been precipitated by an intercurrent attack of pleuro-pneumonia from exposure, and by the supervention of intestinal ulceration.

The amount of blood in the expectoration, May 15, was too slight to allow any conclusions to be drawn as to the effect of the single injection of Monsell's solution.

CASE III. *Hæmoptysis; Chronic Phthisis with large circumscribed cavity at right apex; injections of Iodine.*—Thomas Peyton, colored, æt. 46 years; admitted to the Philadelphia Hospital May 1874. Enjoyed good health until June 1872, when, while working, he had a severe hæmoptysis; followed by two others in course of twenty-four hours. This was followed by cough and dyspnœa, with abundant purulent expectoration. He lost flesh rapidly at first, then recovered somewhat and returned to work in the course of two or three months. He had two or three small hemorrhages subsequently, but continued to improve until the summer of 1873, when he was obliged to quit work for a few weeks, after which he resumed it and continued until May 1874, when he was obliged by dyspnœa to abandon it and enter the hospital. He has usually kept in pretty fair condition; has enjoyed good appetite; had night-sweats in 1873, and again since admission. On admission there were undoubted physical signs of a large superficial cavity with thick walls at the right apex, reaching down to the third interspace. He was placed on use of the following mixture: quiniæ sulph. gr. xxiv; acid. sulph. dil. f3ij; inf. gentianæ comp. f3vj; ft. sol. S.—Tablespoonful thrice daily in water.

20th. A delicate canulated trocar was passed through the second intercostal space into the cavity, and m xxx of dilute Lugol's solution (one-eighth strength) were injected. No unpleasant symptoms attended the operation.

27th. The same injection was repeated. The patient was very nervous, and said it increased the rheumatic pain in his back; no further injections were practised.

July 25. The patient has continued in the hospital, and has used steadily the prescription given above. He has improved considerably, coughing but little, and suffering less from dyspnœa. The physical signs remain as before, save that there is increasing contraction at right apex, and evidence of very little secretion in the cavity.

In this case, also, the size, duration, and superficial position of the cavity rendered it highly probable that the pleuræ were closely adherent over its site. The injections did not produce a single unfavourable effect. The pulmonary symptoms improved steadily, though slowly; but it is difficult to say how much, if any, influence should be attributed to the intra-pulmonary injections which were only twice employed.

CASE IV. *Chronic Phthisis, with large circumscribed cavity at right apex; Incipient disease at left apex; Repeated injections of Iodine; Marked improvement* (Case I. in former article).—W. S., æt. 29, has a strong hereditary disposition to phthisis, having lost his father, mother, and one brother with that disease. He is markedly chicken-breasted, and lame from severe coxalgia. He has been a metal-polisher, and was attacked with cough in August 1872. In October 1873, he had hæmoptysis, after which he failed rapidly; lost flesh and strength; had marked hectic and dyspnœa. There was much pain over the right apex, troublesome cough and abundant purulent expectoration.

There was no recurrence of hæmoptysis, but his condition remained about the same, with occasional fluctuations, until the early part of the present year, when he suffered severely with increased cough and hectic. On February 17, 1874, his condition was found to be as follows: He is much emaciated, and is very easily fatigued. There are no marked digestive symptoms. His breathing is very short, and this is much increased by exertion, so that it is difficult for him to ascend a single flight of stairs. His cough is painful, exciting pain especially on the right side of the chest, but is not very severe at present, and is attended with but a moderate amount of purulent expectoration. The frequency of the pulse is somewhat variable; at present it is 108.

Upon physical examination there is on the left side some roughness of the respiratory murmur, and a few crackling sounds at the apex.

On the right side there is tympanitic resonance, even on light percussion, from the clavicle down to the fifth rib; the most marked (amphoric) tympany is heard at the middle of the second interspace. There is cracked-pot sound for two and a half inches to the right of the sternum from the second to the fifth rib. Auscultation reveals blowing breathing on inspiration and expiration over this whole area—the character of the blowing, however, varying at different points. Over the seat of cracked-pot sound it is very superficial and is rather shrill and high-pitched, and accompanied with large, moist, and gurgling râles. Outside of the line of the nipple it

is larger, lower-pitched, and free from râles. There is intense pectoriloquy over this entire area.

His treatment has been very varied, but without any permanent relief, and the course of the case has been gradually downwards.

On February 24th, the No. 1 needle of Dieulafoy's aspirator with the syringe attached was introduced in the second interspace on a line with the right nipple to the depth of $1\frac{7}{8}$ inches, and was followed by the escape into the vacuum of a few drops of offensive watery pus. About m iv of a very dilute Lugol's solution ($\frac{1}{30}$ strength) were then injected through the canula by a hypodermic syringe.

The operation was followed by loose, rattling cough, and the expectoration of about three fluidrachms of fresh, frothy blood. He was immediately put to bed, and the cough and hemorrhage soon stopped. His temperature in the evening and the following morning was only 99° F.

28th. The injection was repeated in same manner, m vj of iodine solution of double former strength being used. There was tingling pain down the right arm while the needle was in place, but no other symptoms attended or followed the operation.

March 5. Since the last puncture, he has been feeling very comfortable. There has been no hectic; the cough is less severe, the sputa more scanty and whitish. He is bright and cheerful, and states that his dyspnœa is greatly relieved. The same needle was introduced to the same depth at a point one-eighth of an inch nearer to the sternum. The puncture was immediately followed by a rapid flow of fresh, frothy blood into the vacuum, about one and a half fluidrachms escaping. The pump was detached, and ten minims of iodine solution were injected. He was put to bed immediately, but scarcely any cough and no hæmoptysis followed.

8th. The patient is brighter and more cheerful than for months past. There is no hectic irritation, the temperature never rising above 99° or 99.5° . The pulse ranges about 84. His breathing is so much relieved that he has walked up three long flights of stairs without much dyspnœa. His weight is now 107 pounds. The cough is but little troublesome, and only a few white, frothy sputa are raised. Auscultation shows that many of the râles formerly heard over the right apex have disappeared. There has also been some increase in flesh. All internal medication was now discontinued.

Before this he had been taking cod-liver oil, a pill of quinia, digitalis and opium, and a sedative cough mixture.

10th. Twenty minims of same solution were injected at a spot a little outside of the former puncture. The aspirator no longer used. A strong iodine taste was immediately perceived.

15th. Fifteen minims of same solution injected. During the past week he has had more cough and expectoration, and has felt weak and chilly; partly on account of very low temperature in ward, partly on account of the withdrawal of internal medication.

22d. Twenty minims of same solution injected; no unpleasant results.

30th. Fifteen minims of a stronger solution (Lugol's solution m x to f3j of tepid water) injected.

April 3. Not feeling so well; increase of cough and expectoration and hectic fever. Also suffers from indigestion. Was ordered quiniæ sulph. gr. iij t. d. also strychniæ sulph. gr. $\frac{1}{30}$; acid. nitro-muriatic. diluti m x ; liq. pepsin f3j t. d.

9th. Injected m xxv of Lugol's solution (one-seventh strength).

10th. Slept well last night and feels a great deal better; has had hardly any cough. Weight 109 pounds.

17th. Injected m xv of same solution. Bowels costive; ordered laxative pill of colocynth and belladonna. The acid tonic mixture ordered on the 3d now stopped; quinia to be continued; and mist. ol. morrhue cum calcis lacto-phosphatis $\text{f}\frac{3}{4}\text{ss t. d.}$ ordered.

25th. Injected in same manner.

May 3. Repeated same injection. Patient improving. Is able to sleep well. Has no hectic. Coughs very little, and expectorates purulent matter in moderate amount. Is out every day walking over a mile.

8th. Injection repeated with m xxv of Lugol's solution (m xij to m xlvij of warm water). Weight increased to $111\frac{1}{2}$ pounds.

Same injection repeated May 15th, 24th, and 30th; and June 5th and 14th. On introducing needle at usual spot in second interspace, the point was evidently imbedded in dense tissue instead of entering cavity. This has been growing more and more marked for some weeks past. The injection entered with difficulty and only m xv were introduced.

June 21st and July 1st m xxv of same solution (1 to 5) were injected in second interspace, three-quarters of an inch outside of nipple line.

6th. Repeated injection, and found difficulty in forcing fluid in, so that only m xij were injected. Continues to improve, although a good deal affected by the hot weather. Expectoration very scanty, not more than $\text{f}\frac{3}{4}\text{ij}$ daily.

15th. Still more difficulty experienced and only m vij injected. This is evidently owing to increased development of fibroid tissue in wall of cavity leading to thickening and contraction.

21st. Injected m xxv in first interspace in the line of the nipple without any difficulty; severe tingling pain coursed down right arm for a few moments.

August 17. No injection since last date, owing to my absence from the city. For past three or four days, he has had some catarrhal irritation, in consequence of imprudent withdrawal of his underclothing. He has continued in fair condition, with very little cough and expectoration. He has for several months spent the greater part of every fine day out of doors, walking considerably. There has been scarcely any hectic fever, as indicated by the thermometer. He has gained flesh slightly; appetite and digestion good. The physical signs indicate no extension of disease in left lung. There is increased contraction at right apex. On percussion, there is marked diminution in the cracked-pot sound; and tympanitic resonance is less superficial and readily developed. There is still marked blowing breathing and pectoriloquy; but respiration is accompanied with much fewer râles than formerly.

In examining this history, I think it will be granted that it was far from being a favourable case for treatment, when we add to the marked family tendency to phthisis and the previous scrofulous affection, the advanced disease of the right lung, and the incipient trouble at the left apex. And yet it is unquestionable that during a period of six months, in which time twenty-three injections have been made, there has been a progressive improvement both in the general and local conditions. He has gained a few pounds of flesh, but has gained vastly more in vigor and power of exercise. His spirits and morale have greatly improved. Cough has

almost left him, and the expectoration is very trifling. There has been very slight progress in the signs of disease at the left apex, while there has been an evident contraction of the large cavity at the right apex, as shown by the greater retraction of the ribs, and the increasing displacement of the heart towards the right side, as well as by the increased resistance to the introduction of the needle.

CASE V. (Case III. former article.) *Chronic Phthisis of Right Lung with large Cavity at the Apex; repeated injections of Iodine; Improvement.*—James Hill, æt. 27, was admitted to my ward in the Philadelphia Hospital. His father died of phthisis; he himself enjoyed good health until November, 1871, when he had an attack of rheumatism. In April, 1872, he began to be troubled with cough and pain in the right chest; the cough was at first dry, but later has been accompanied with purulent sputa. He first spat blood in July, 1872, and since then he has had quite frequent small hemorrhages. He has suffered much from pain in various parts of the right lung. He has had comparatively little hectic fever, but has lost much flesh and strength.

He was obliged to give up work in November, 1873. His weight on admission was $117\frac{1}{2}$ pounds. Marked dyspnœa on exertion, pulse 120 when quiet.

Physical examination shows contraction and comparative immobility of the right side; enlargement of the left side, with slight curvature of the dorsal spine, and deviation of the sternum. The left lung is hypertrophous and healthy. There are the physical signs of a quite large cavity at the right apex, with marked thickening of the pleura and induration of the lung below. The apex-beat of the heart is just to the right of the sternum.

Over the right infra-clavicular space, down to the third interspace there is deep-seated tympanitic resonance, which on strong percussion is amphoric with slight cracked-pot sound; cavernous breathing, both in inspiration and expiration, with bubbling râles with amphoric echo, and marked pectoriloquy for the spoken and whispered voice. On March 8, the No. 1 aspirator-needle was introduced in the second right interspace a little outside of line of nipple to the depth of one and seven-eighths inches, and evidently entered a cavity. About seven minims of dilute Lugol's solution were injected. The operation produced a paroxysm of spasmodic cough, but was followed by no hæmoptysis or irritation. On the following day there was a little blood-stained expectoration, such as he frequently had.

March 15. Repeated same injection, using m xv .

22d. Injected m xx of same solution.

April 9. Injected m xxv .

10th. Has been taking much subnitrate of bismuth and pepsin for his dyspeptic symptoms. Now ordered syr. ferri iodidi gtt. xv t. d.

17th, 25th, and May 3. Again injected m xxv of dilute Lugol's solution (1 pt. to 7 of tepid water). He has gained $6\frac{1}{2}$ lbs. since admission.

May 8, 15, and 24. m xxv of stronger solution (1 part to 5 of water) were injected. Not the slightest inconvenience has followed any of the injections.

30th. Injected m xvij of this last solution in the third interspace.

June 5, 14, 21, and 29; July 6, 16, 21, and 28. Repeated same injection, but in second interspace as formerly.

August 17. On my return to the city, I find him in bed with a marked attack of purpura. He has been ordered fresh vegetables and fruits freely,

and is getting well of it rapidly. His general condition is favourable. There is very little cough or expectoration, and the physical signs indicate a tendency to still further contraction of the right chest, especially at the apex. The heart's action is still excited. Until the development of the attack of purpura he has been able to exercise freely out of doors. No injection since last note.

In this case, as in the former, the prognosis was rendered unfavourable by the large size of the cavity and the implication of the rest of the lung, as well as by the hereditary predisposition of the patient, the frequent recurrence of hemorrhage, and the marked emaciation, dyspnœa, and prostration. On the other hand, the tendency of the disease to assume a fibroid form, and the evident attempts at compensation in the retraction of the chest, the hypertrophy of the left lung, and the displacement of the heart were favourable elements of prognosis. Still it will not, I think, be doubted that the progress of the case has been exceptionally favourable; so that, while it is very certain that the local treatment above described was not in any way injurious, it is altogether probable that it has been productive of good in favouring contraction and cicatrization of the cavity.

CASE VI. *Chronic Phthisis; frequent Hemorrhages; large Cavity at Right Apex; Repeated Injections of Iodine; Marked Improvement.*—W. E., æt. 43, a tall and heavily-built man, a labourer, of very intemperate habits, was admitted to the Philadelphia Hospital 19th March, 1874. His father and one of his brothers died of phthisis; the rest of the family are very healthy. He had several attacks of gonorrhœa, and one attack of syphilis, followed by very mild and transient secondary symptoms. He was very much exposed in consequence of his work and intemperate habits, but was not subject to catarrh. Had severe attack of typhoid fever in spring of 1870. In the fall of that year, cough began with expectoration of muco-purulent matter, occasionally containing small proportion of blood. In October and November he had frequent large hemorrhages; dyspnœa became marked, and he lost flesh and strength rapidly. He gave up work then and has been able to do very little since. Since then his condition has fluctuated from time to time. During summer of 1873 he had a good deal of purulent expectoration and occasional hæmoptysis, but had some periods of comparatively good health. At beginning of the fall he lost flesh and strength still further, and entered the hospital in October. He went out in January and returned in March. At that time, his weight was 149 lbs. His dyspnœa was extreme, and he had great difficulty in going up stairs. Cough was very troublesome and attended with abundant blood-tinged expectoration.

On physical examination, the thorax is rather narrow with increase of antero-posterior diameter. The apex beat of heart is in fifth interspace just within left nipple. No clubbing of fingers. Enlargement of capillaries of nose and cheeks.

At the right apex there is large tubal tympanitic resonance over inner two-thirds of infra-clavicular space, and over the outer third dulness on percussion. Posteriorly there is dulness down to a little below spine of scapula. At left apex the percussion resonance is a little higher-pitched than normal. Elsewhere it is normal.

Auscultation at right apex reveals loud, dry, cavernous breathing down

to third rib anteriorly, and, over third interspace, moist crackling with prolonged expiration. Posteriorly there is large blowing breathing over apex. Below, respiration is normal anteriorly and posteriorly. There is distinct pectoriloquy over the infra-clavicular and supra-spinous spaces. At left apex anteriorly, there is feeble respiratory murmur, with dry crackling over upper lobe anteriorly. On palpation the vocal fremitus diminished all over thorax; same at right apex. He was ordered cod-liver oil and a cough mixture containing cyanide of potassium.

April 9. His condition appeared stationary. He suffered much from dyspnœa, weakness, and cough. An injection of m vi dilute Lugol's solution (1 part in 10 of water) was made into the cavity through the second interspace in line of nipple. This was followed by a severe spell of coughing, lasting an hour, and requiring chlorodyne for its relief.

17th. Injected m xv of same solution. Has had rather more cough than before first injection.

25th. Same injection repeated.

May 3, 8, 15, and 24. Injection repeated, using m xv to xx of solution varying from 1 part Lugol's solution to from 9 to 6 parts of warm water. His weight increased 11 pounds, to 160. Better in every way; cough greatly relieved; has had no blood-stained sputa for some time. Is now able to walk considerable distances.

June 5 and 9. Same injection repeated.

21st. Injected m xxv of Lugol's solution (1 part to 5).

June 29 and July 6. Injections caused some pain owing to difficulty in introducing fluid, apparently owing to increased induration and contraction of tissue at point of puncture.

July 8. Injected m xxv of same solution in first interspace in line of nipple, without slightest difficulty, and with production of no cough or pain. The needle was introduced $1\frac{5}{8}$ inches.

16th and 21st. Repeated same injection at same point.

August 17. Owing to absence from the city no injection has been made since last date. For the past two or three months has spent almost the entire day in the open air, his strength has been increasing, and he now walks as much as five miles a day without fatigue. His breathing has become much easier; is able to carry a bucket of water up to the third floor without dyspnœa. For the past eight weeks his cough has been rapidly decreasing and during the past month has ceased, and there has been no expectoration. There is an entire absence of hectic fever. His general appearance is excellent, and his appetite and digestion are good.

The right apex is motionless during respiration; there is no increased contraction of right apex; tympanitic resonance is less distinct, it being best marked over inner half of first and second interspaces. There is large diffuse blowing over outer part of first and second interspaces, which toward sternum becomes almost cavernous. There is less dry crackling over the left upper lobe with improved respiratory murmur. He continues to take cod-liver oil and two ounces of whiskey daily, but needs no cough mixture. To-day repeated the same injection through first interspace.

In this case, also, although a more favourable prognosis was justified than in the two last ones, it must not be forgotten that the patient's condition, when the use of injections was begun, was worse than at any previous time, and that evidences of incipient disease of the left apex had

made their appearance. The improvement which has taken place during the continuance of the local treatment is very positive and gratifying, and shows itself by disappearance of cough and expectoration, by entire cessation of hæmoptysis, by relief of dyspnoea, and by gain in flesh and strength.

The momentous importance of determining the actual clinical value of any mode of treatment which claims to be of use in pulmonary phthisis, forbids any rash conclusions drawn from insufficient data. In March last I stated that "the practical value of this mode of treating pulmonary diseases is as yet uncertain." Subsequent experience, although by no means sufficient yet to justify a claim of curative powers for it, has certainly strengthened its position. In the first place, it is evident from the record of cases here published that the injections of iodine reach the lung cavity and exercise a decided action upon its lining surface. This is shown by the depth to which the needle is introduced, by the strong and unmistakable taste of iodine frequently perceived after the injections; and by the paroxysms of cough caused by the first injections in each case. It is evident also that this action proves not only to be unirritating, but to tend to a diminution of the morbid sensibility of the cavity walls, and to a healthy modification of the cell-action there. This is shown by the fact that, although the amount and strength of the injections have been considerably increased, in each case they have ceased to produce any cough. It will be remembered that in the earlier injections very small quantities (m_{iv} to vij) of very weak solutions (Lugol's solution m_{ij} to iv to f_{3j} of water) were used, but they have lately been increased to m_{xxv} of a mixture of 1 part Lugol's solution and 5 parts of warm water. It may be doubted if the small and feeble injections at first employed could produce any marked effect upon the lining surface of a large cavity; but this power will scarcely be denied to the much larger and stronger injections lately used. Their action further appears to be beneficial, and the modification of the cell-action in the walls of the cavity to be in a healthy direction, since during the continuance of this treatment there has been in each case a marked improvement in the soreness about the cavity, and, even more markedly, in the amount of cough and expectoration. I do not think that the evidence afforded is yet sufficient to prove that these injections have led to partial cicatrization and contraction of the cavities; but the improvement in the physical signs carefully noted above, certainly seems to indicate it. If they succeed in effecting this, it will presumably be by so modifying the cell-action in the walls of the cavity as to lead to a production of more healthy lymph capable of developing into fibro-cellular tissue, limiting the enlargement of the cavity, and ultimately by its organization and contraction tending, in conjunction with other agencies, to diminish its size. It must be noted that in two cases (IV. and VI.) the increasing density of the tissue through which the needle had been passed, and the increasing difficulty of effecting the injection at the original spot, would

seem to point to this change in the walls of the cavity. This question must, however, be settled by more prolonged observation.

It is finally evident that, if these injections are capable of disinfecting the contents of a lung cavity, and of so modifying the morbid action in its walls as to diminish the suppuration, they may be of the greatest value by lessening hectic irritation, and further by diminishing one of the greatest dangers of chronic phthisis, the liability to constitutional infection, and the development of diffuse miliary tuberculosis. It may be maintained in opposition to all here advanced that the favorable changes in the three cases last reported (IV., V., and VI.), are accidental and temporary, and merely such as are seen from time to time in the course of many cases of chronic phthisis. I can only vouch for the clinical records as presented; and call attention to the facts that these three cases were doing badly, despite careful internal treatment, until the beginning of the use of intrapulmonary injections; that since then their improvement has been such as would be rather surprising in a single case, but much more remarkable in three unfavourable cases treated simultaneously under rather unfavourable circumstances; that the course has been uniform in all the cases, and marked by the same changes; that it has been attended with positive improvement in the physical signs; and that this steady gain has seemed to the patients themselves, and to all who have watched them, to be directly connected with the treatment employed.

In concluding our study of this question the following points appear to have been established :—

1. That the idea of opening lung cavities by an incision through the chest-walls is at least as old as Baglivi (probably much older); but that, owing to the very imperfect character of early clinical records of thoracic diseases, it is difficult to show that such an operation was actually performed before the last century (Barry), or more probably the present one (Hastings and Storks).

2. That the idea of conducting continuous treatment of such cavities by local applications made directly through the chest-walls, has been seriously entertained only within the past few years.

3. That the possibility of puncturing the lung in a state of health with delicate needles without injury, was demonstrated in a few instances by the advocates of acupuncture; and more recently, in the lower animals, by Koch and others.

4. That the operations of Storks and Mosler have shown that lung cavities are very tolerant of external interference, and that they may be cut down upon and opened, canulæ introduced and retained, and various medicinal agents injected in solution or spray (Mosler).

5. That the independent observations reported in full in this paper have shown that the continuous treatment of lung cavities by repeated injections by means of delicate canulæ may be conducted without pain, hemorrhage,

traumatic irritation, or interference with internal medication and hygienic measures.

6. That the cases which are best adapted for this local treatment are those where a single, superficial, and circumscribed non-tuberculous cavity exists; but that even when there is implication of the rest of the lung, or incipient disease of the opposite lung, some benefit may be expected.

7. That the mode in which such local treatment does good, is chiefly by altering the character of morbid action in the walls of the cavity, diminishing the amount of purulent formation, as well as the degree of hectic irritation and the danger of constitutional infection. That a certain amount of rest for the walls of the cavity is secured by the marked relief afforded to the cough. Also that it is indicated, by the progress of the cases above reported, that this treatment may favour the cicatrization and contraction of such cavities.

8. That in the cases in which it has been employed (in which over seventy injections have been given), it has shown itself free from all danger, and of a *certain degree of positive clinical value*, since, during its use, uniform improvement to an exceptional degree has taken place in both the general and local conditions of the patients.

ART. II.—*Post-Paralytic Chorea*. By S. WEIR MITCHELL, M.D.,
of Philadelphia.

I HAVE long had in mind to call attention to the mode in which various forms of neural disturbance may succeed one another, seeming to grow out of degrees, or, at least, out of variations of one common parent cause. A well-known sequence is the passing of chorea into hemiplegia, or, more rarely, into a curious double hemiplegia.

It is not so well known, perhaps, because it is so rare, that a curious but noticeable one-sided awkwardness of movement is in some cases the precursor in children of a hemi-spasm.

In such a case, well known to me, the child was considered for some days to have incipient chorea on the left side, and had indeed all of the peculiar awkward ways of that disease. It increased during a week, and then ended in convulsions, beginning and closing with pure left hemi-spasm.

In a case, lately brought to my clinic in a state of protracted hemi-spasm, there was said to have been the same previous condition, and the doctor who saw it considered it to be chorea.¹ I have in like manner seen

¹ The spasm in this case I at once relieved by nitrite of amyl, and the child went into a quiet slumber. Nitrite of amyl has passed long since into familiar

the hand of a clerk, incapacitated for using the pen, at one period by cramp, at another by choreal disturbances, and lastly, by intense pain, that is, at different times these three symptoms were observed as a result of excessive use of the pen.

The sequence of loss of power following chorea has been amply seen and fully described, but, if I am not mistaken, the fact that organic palsies, especially hemiplegia, are occasionally followed by hemi-chorea, or a still more limited local development of that disorder, is, I think, less well known. In briefer language, as there is a post-choreal paralysis, so, also, is there a post-paralytic chorea. The propositions which I desire or hope to prove are these :—

That on adults who have had hemiplegia and have entirely recovered power, there is often to be found a choreal disorder, sometimes of the leg and the arm, usually of the hand alone. That it may exist in all degrees, with partial loss of power, and with full normal strength. That it may consist in mere awkwardness, or exist to the degree of causing *involuntary* choreoid motions of the part.

I hope also to show that the younger the person when paralyzed, the more probable is the occurrence of choreal developments, so that in many cases of infantile deformity the choreal troubles remain as the chief difficulty long after there has been a restoration to full muscular power.

I have reason to believe that some of the general and prolonged choreoid disturbances which we see now and then from birth, are due to, or, rather, are in some fashion related to, intra-uterine palsies which have either wholly or in part passed away.

If these propositions are correct, or even the first two, they will prove that choreoid affections may be owing to gross organic lesions, and that under certain favouring circumstances, the same lesion which occasions a palsy may in itself, or in the disturbances it causes, also bring about chorea. It is quite plain that the post-paralytic chorea is rare, but less so than I used to think. It is not found well marked in cases of palsy which remain much enfeebled. One may see cases of nearly absolute extinction of movement, whose actions are quite free from any lack of guidance, devoid of all uncertainty, save that which comes of loss of power. Nor is this acquired awkwardness which is left by some of the better recoveries from palsy altogether sudden; on the contrary, where I

use at this hospital, and, indeed, is looked upon by many physicians in America as the best of all the immediate anti-convulsivants. It was first used with success in convulsions by me in 1871, and my results were published in April, 1872, in the *Philadelphia Medical Times*. A very important case, in which it proved of singular value, was soon after reported in Brown-Séquard's *Archives*, by Dr. Wharton Sinkler, and it was, at my suggestion, next used with success, by Dr. Jenks, in eclampsia. I am glad to see from recent reports that it is beginning to attract attention in England.

have been able to study it, it has seemed to grow slowly, increasing as the paralytic state faded out. It appears in such cases to be owing to some tardy and chronic change about the seat of the clot or embolus; but as to this I hesitate to speculate further, believing that, having thus called attention to these facts, they will in future be more often found and more fully studied.

CASE I.—The following case I attended in the first attack of hemiplegia, and saw many times afterwards. Since it is the only case which ended in death, I give it the first place. The following notes are Dr. Sinkler's report of the case to the Philadelphia Pathological Society:—

The patient was a man 47 years of age, single, who for some years had been employed in the post-office as letter-carrier and clerk. For twelve years he had served in the British army in India, and during the late war he was in the United States Army. He had always enjoyed good health, and was temperate in the use of tobacco and liquor. He had never suffered from any constitutional malady.

There was no cardiac disease, nor were there any atheromatous changes in the radials.

December, 1871, he had an attack of left hemiplegia. The paralysis was not absolutely complete, he being able to move slightly the hand and foot, and in about six months was able to return to light work. He could walk fairly well at the end of this time, could use the arm to some extent, and there was no contraction of the flexors on the paralyzed side.

For several months he continued to improve. Once, however, he had an attack of vertigo, which was followed by an increase of weakness for a few days.

Rather more than a year after the first attack he had a second. He did not become unconscious, but he was extremely difficult to rouse. The face was flushed, the breathing stertorous, and the speech thick. He complained of intense pain in the head. The loss of power was on the right side, but it was not so complete as it had been on the left side in the previous attack. There was no facial palsy. It was two or three months before the patient was able to walk even a few steps. The muscular power of the limbs seemed to have returned, but the difficulty was in co-ordination. The power of locomotion in time returned to some extent, but he was never able to walk any distance, even with assistance. His gait was uncertain, and if his attention was called to anything while he was walking he was liable to fall. In fact, there was a sort of choreic condition of the limbs which was induced when voluntary effort was made, and unless he carefully observed his movements he tottered or fell.

During the next few months he had several attacks of vertigo, followed by severe pain in the head, loss of appetite, and obstinate constipation. After these attacks there was always increased difficulty in walking. For several months before death the expulsive power of the bladder became weakened, and urination was often delayed many hours.

On May 7, 1874, while sitting on the commode and endeavouring to urinate, he suddenly fell forward unconscious. He was caught, however, before striking the floor. There were no convulsive movements, but the body became rigid and the eyes were rolled up. Consciousness returned in a few minutes, but on recovering he felt as if he were choking. He could not swallow, and respiration was laboured. Speech was thick and almost inarticulate. For a few days before this he had been unusually heavy and inclined to sleep most of the time. In a few hours he was able to take into the stomach some liquids; but the next day the inability to swallow returned, and the respirations became more frequent and difficult. The bladder was emptied by the catheter, and the urine examined and found to be free from albumen.

His condition from this time grew steadily worse. The surface became congested from insufficient aeration of the blood, everything that was attempted to be swallowed was regurgitated through the nose and mouth, and the patient died on May 12.

There was no increase of paralysis in the extremities, and consciousness remained almost to the last.

Post-mortem forty-eight hours after death. The body was in a good state of preservation, having been kept in ice. The veins of the scalp were full. The skull was brittle, a corner breaking off when the calvarium accidentally dropped on the floor. Dura mater not unusually congested. In the superior longitudinal sinus was a firm white clot extending almost its entire length. The arachnoid was opaque over its convexity, but was more especially so at the base. A white clot occupied the right internal carotid. The vessels of the circle of Willis were enlarged and extensively atheromatous. The right middle cerebral artery was almost double the normal size, and stiffened with atheromatous changes; the left was in very much the same condition, and in the under surface of the middle lobe, where the vessel rested, was a spot of softening the size of a pigeon's egg. On section of the brain, the puncta vasculosa were prominent and some serum exuded. There was a moderate amount of fluid in the ventricles. In the left corpus striatum was a patch of softening as large as a filbert. No change in the right. In the right crus cerebri was a small spot of softening, which presented a dark color with many almost black points. A fragment of this was kindly examined by Dr. Tyson, who found only pigmented cells and no hæmatoidin crystals. There were adhesions and recent lymph in the right pleura, and the base of the right lung was somewhat congested. The liver and kidneys were gorged with blood, but otherwise healthy.

This case is in many ways valuable here. In the first hemiplegia, which was on the left, he was delirious or insensible for two days, and very slowly but very completely recovered power. In fact, he became so well that there was but slight difference in the force of the left or the right grasp, or in that of the separate fingers. I think that he had at this time in the left hand a remarkable awkwardness, but as to this I am not absolutely sure, for I was not then so attentive to this point as I have since become. His attack was on Dec. 24. Jan. 20 I stained his finger nails on both sides. No growth took place on the left side for two weeks, and up to April the left growth was one-half that of the right. About March 10 he had one of those strange attacks of arthritis which Charcot and myself and some others have described. In this case it was sudden and acute, and involved every joint of the left (palsied) arm, there being elsewhere no pain or swelling. I have never seen a more remarkable case of post-paralytic arthritis. It grew well very slowly, but became more completely well than is usual in such cases.

Then came the second hemiplegia (right side), not so profound an attack. In neither was there loss of sensation. Again he recovered full power. The amount of it restored was indeed notable, but as the reporter states, despite his strength, which seemed to be amply sufficient to enable him to walk, he had a disorder of movement which Dr. Sinkler, whose attention I had often called to such cases, looked upon as deserving the name of choreic. It was so extreme that all the man's attention was needed to enable him to walk, but it was not eyesight that was thus needed, but concentration of will to regulate motion. He walked as well in the dark as in the light.

This patient had no involuntary or spontaneous movements, no motor

disturbance until voluntary acts were attempted, when they at once became irregular; those of the hand were, as I recall them, so striking, that they possessed every clinical peculiarity of the chorea of childhood.

The lesion mentioned in the report as a small spot of softening in the right crus cerebri was, I suspect, the site of a former clot. The general and most extreme changes in the intra-cranial vessels, with almost utter absence of atheroma outside of the head, strike me as clinically curious. The great amount of lesion in this interesting case makes any further pathogenetic analysis of symptoms unprofitable; but it may come to be read more clearly in the light cast by the future cases which I shall here relate.

CASE II. Hemiplegia; repeated attacks; post-paralytic chorea, with automatic choreal movements.—M. H. S., æt. 38; no children; married sixteen years; has had no syphilis or rheumatism. She presented herself at my clinic January 28th, 1874, and gave me the following account: In June, 1872, she was taken in the street with partial loss of power on the left side. It involved the left face. The following night she was delirious—screaming and laughing—being in great measure conscious, but unable to control herself. The leg proved to be but slightly affected, the hand not severely; but for four days she was unable to say what she wanted, but was able to make signs and to write. For a week the face was drawn to the right.

In July, 1872, she had a second attack on rising in the morning. This time she lost all power to speak for twelve days. There was no wrong use of words on recovery, but simple and complete loss of speech, and ever since a certain thickness of utterance. No loss of consciousness, but entire loss of motion on the whole left side. Again recovery was rapid, and in seven weeks she could walk, and use the arm well. On the 11th of January she had partial loss of power in the right leg, and later in the day of the right arm; also there was some twitching of the leg, and an increase of the facial (left) palsy, which had never improved as much as the limbs. In a few days she became much better, and within a fortnight ceased to drag the foot.

The face is still decidedly drawn to the right; the heart-sounds normal; urine healthy; menstruation regular; the eye-grounds are absolutely normal; no headache or vertigo.

The movements of the right side are strong; the grip égal by dynamometer, but there is a curious and indescribable awkwardness of leg-action on the right, and the right hand movements are simply choreic. The effort to pick up, or take any small object, results in contractions and slow extensions of the fingers, which also separate from one another, and the effort results in failure, either from falling short of or from passing by the object aimed at; with this, there are, at each effort, twitches of the right face, and excitement seems to increase all her motor difficulties. When not willing an action, her fingers, like those of a bad case of chorea, are constantly in movement, shutting, opening, separating, but these motions cease during sleep.

The treatment used proved of little value.

The choreal character of this case was complete, and it could have been cited or shown to a class as a type case of unilateral chorea.

CASE III.—My next case, W. H. E., æt. 65, is taken from the rich note books of my clinic, at the Infirmary for Nervous Diseases. It is not so precise a case as the last, but is interesting for its differences and peculiarities.

This man, well up to March, 1869, was first seized with numbness in the ulnar nerve tracks (right). Then he felt a sense of lack of power to direct the legs, and within an hour, having no loss of consciousness, he was attacked with entire loss of motion and sensation on the right side. For several days he could not speak at all. Motion returned slowly, so that he can walk fairly well, and use both hands.

I saw him in February, 1872, and then found the following remarkable symptoms: He had loss of sense of touch, pain, and temperature, on the whole right side, including the tongue and mouth. He had a constant stinging and burning pain at places, which shifted anywhere or everywhere in the side affected. Movement, active or passive, either brought this on or increased it. A rough contact also awakened it, but a touch would not. Once started, the pain spread outwards from the spot first influenced, and soon was felt irregularly here and there throughout the side, but within half an hour, even if severe, it faded away. Sensibility was not extinct in the arm or the leg, and in these members every touch was pain. In the face and neck, and at parts of the trunk, the anæsthesia was complete, but deep rubbing or a blow would cause the same pain, and then the same radiation of it would occur. At the same time there were more or less constantly a feeling of formication, and of horrible burning, and a sense as of worms crawling under the skin. As in other cases of unilateral burning, with or without anæsthesia, there was a great increase from effort, as in the strain of defecation. In this man, as in a case which I now see frequently, there was also a sense of constriction around the waist, and in various parts about the limbs, like the common girdled feeling of myelitis and ataxia.

He walked pretty well with a cane, but put the foot down clumsily, and did not like to use the hand, owing to the pain it caused. He could open and shut the hand at will, and the force of the grip differed little on the right and left; but the effort to seize any minute object with the right hand resulted in curious awkward movements, ending at last in repeated and annoying failures.

When the hand was not in voluntary activity, the fingers were in constant motion. They opened and shut, and came together or spread apart laterally, and this if the eyes were opened or not. I regret that I did not ask if this motion ceased in sleep. A voluntary act substituted for these movements the strangely awkward efforts I have spoken of, which would without doubt, I think, be called choreal. Excitement greatly increased their peculiarities.

There was in this case another point of interest. If he willed a movement, as of the fingers, he could tell where the motion placed them, but if I bent the wrist and crossed the fingers he was absolutely unable to say where the parts were, or in what relation, but he walked or moved his hands as well with his eyes *closed* as with them open. This man had no heart trouble, and no syphilis. He worked as a teamster, or rather owned a number of drays. He had normal urine, and no disorder of the eyes; indeed, as far as I could learn, had no double vision at any date.

The numbness improved, but in July, 1872, he died suddenly, with a large clot in the right cerebrum, and was said by the surgeon, who made the examination, to have had evidence of a large old cavity, which occu-

pied much of the left corpus striatum, and this was all I could learn of this most interesting case.

CASE IV.—R. W., æt. 19. This girl previously suffered from loss of appetite, but although living in a damp, undrained house, was as to all her organs and functions in good health. In March, 1869, after an attack of sick stomach and headache, she went to bed at 6 P. M., and awaking at 9 P. M. was seized with hemiplegia of the left side and left face. For twenty-one days she could not move, and then the leg got better, and was well, though very easily tired when I first saw her. The arm also improved, but although it had every motion, she could raise Duchenne's dynamometer to 70° with the right, and only to 25° with the left grasp.

Sensation was lessened in the left hand, nine lines being at the index-finger tip the confusion limit. The left hand was cold and easily chilled. Under induction currents to the muscles, dry faradization to hand, hypodermic injections of strychnia, with tonics, the hand grew warm, the feeling improved, and the grasp-power rose to 50 (left) by June 9th.

During the time she was under my care, the arm and hand exhibited, during voluntary movement only, all the usual difficulties and irregularities seen in a case of well marked chorea. She dropped things, failed to direct her motions, and was plainly choreic, but only in the hand and arm, nor did these improve as her general strength grew better.

These cases may suffice as examples of post-paralytic chorea in adults. I have seen many others and some even more remarkable, but of which I have not notes. It is to be observed as regards all of them, that the chorea occurred in either right or left half-palsies, that it was worse in the region of complicated motions, the hand, and that in no case was it seen in connection with rigidity of the part; while its presence and long continuance seemed to be consistent with various degrees of regained power, from the least up to the most complete.

I might also have added to my cases a number of those singular forms of post-paralytic spasms in which the arm or the hand incessantly repeats certain regular and purposeless motions, which in some cases are unrestrainable, in others are seen to disappear during volitional acts which, in this case, may or may not show by their irregularities any trace of the spasms alluded to. I had one patient who, after a right hemiplegia, incessantly rubbed the right leg with the right hand, so as even to wear out the pantaloons. I know of another whose arm is alternately pronated and supinated, and one whose limb swings across the body only as he walks, at each step the fingers being firmly flexed. All of the post-paralytic cases are not quite so hopeless as those given above, but as a rule the chorea is likely long to outlast the return of normal power; yet as to this question of full power, I think it right to add that the return to a healthful standard of endurance is very rare, and that invariably prolonged exertion increases the choreal troubles for a time, as any lowering agency affecting the general health will do for a longer period.

The cases of complete recovery were always in very slight palsies.

CASE V.—In January, 1874, I saw a man, T. G., æt. 52, who, in April, 1873, with no premonition had left hemiplegia, and was insensible for an hour. He had a sense of numbness, but when I saw him the power and the feeling were normal. The inco-ordination of the hand was most striking, and so also, as is not rare in these cases, was the absence of tremor. He could not handle or pick up minute objects at all. There was no movement when the part was not volitionally exerted. Six months treatment by strychnia and induction currents, left him with scarce a trace of the old trouble.

I have remarked at the beginning of this paper upon the rule which I thought demonstrable, in accordance with which post-paralytic chorea is more surely found, the younger the subject of the paralysis. I think I can go further, and state that very few cases of hemiplegia in young children fail to leave them with more or less of the form of inco-ordination we call choreal. I suspect, also, that it is not to be seen in the slight brachial palsies, resulting from the true spinal palsy called infantile, but slight brachial remnants of infantile palsy are rare. I may possibly be wrong as to this point, but I have been used to diagnose at sight from the choreal movement during volition, the presence in a child of a cerebral palsy. This, at least, I am sure of, that very complete infantile palsy may occur, and pass away, leaving no choreal heritage, while as profound a loss of power from cerebral disease almost surely sets this future mark upon the muscular motions of the limb.

The post-paralytic chorea of man is troublesome enough, but that of childhood is more grave, because it makes it so hard to relieve deformities, and to treat with success the relics of the palsy, while, also, it interferes with education in very many ways.

If I had any hesitation as to naming the post-paralytic inco-ordination as choreal in the adult, I should not have a trace of doubt as to my clinical right so to call it in the child, and I suspect that when attention is fully given to this class of facts, almost every physician will be able to recall to mind cases of this interesting malady.

As might be expected, children born palsied are sure victims of choreoid disturbances. I have the belief that some of the forms of general and congenital chorea, with partial limb-weaknesses, or sometimes with general lack of power, are merely examples of the remoter consequences of intra-uterine cerebral palsies. If I had studied with more care the cases of these congenital choreas which have passed under my eye, I could, I suspect, have often obtained evidence of the former palsy, but while to look at a case with a special object has its logical dangers, it has also, for well balanced searchers, its plain advantages; and at the time when I saw the best of these cases I had not begun to know how much of interest lay in their study. They seemed then to me, as to all of us, hopeless, irremediable curiosities, utterly inexplicable, from which no man could learn anything of value.

I quote the following case from the note-books of my clinic at the

Infirmity for Nervous Diseases as illustrative of my meaning. It is, of course, open to infer that there may have been intra-uterine defects of neural nutrition, rather than a true palsy, and such may, indeed, have been the case.

CASE VI.—R. G., female, æt. 4, of light hair and complexion, and healthy appearance; is intelligent, but speaks with difficulty; no trace of facial palsy; is now always well, and has never been ill. From birth she has been excessively feeble in the trunk, and cannot sustain her head erect without aid. The right leg is very weak, the left better, and she can stand by a chair, but only with large aid from her arms and hands. The right arm is the more feeble, but both upper limbs are much more powerful than the lower, whilst among the muscle-groups in either arm some are much stronger than others. The hands are kept in slight flexion, but can be extended. There are no notable atrophies, and no lack of sensation. The notes of the electrical condition have unhappily been left out. While, with more or less effort this child could move every muscle, some of them could be but merely stirred, and were incompetent to effect a motion of the part. The whole body was more or less disturbed by choreal movements, which were mild though incessant during inactivity, but hopelessly wild and disqualifying during voluntary action: those of the hands being most remarkable.

I have spoken with caution of the origin of this case, and have quoted it chiefly to call attention to this class of possible causes of general chorea.

The following case is an excellent instance of chorea from paralysis at birth:—

CASE VII.—C. W., female, æt. 11, was delivered by forceps, and when born was in general convulsions. She bears to this day the mark of the forceps upon her left temple. The convulsions disappeared within a few hours, and left her with total palsy of the left side, and inability to take the breast. From this time her history is that of an early hemiplegia. In later years this palsy involves no atrophy, but in early life every paralysis, cerebral or spinal, may cause atrophic change, and even the most distinct cerebral palsy may bring about defects of nutrition and absolute shortening of limbs. In the present case the loss of power lessened by degrees, and when I saw her first she was then nine years old; the right leg and arm were a good deal shrunk, or, rather, were undeveloped, the right leg a half inch shorter than the left, and owing to relatively greater palsy of the extensors of the foot, the gastrocnemial mass was shortened from lack of opposition, and the heel drawn up. The power of the right (paralyzed) foot and hand was greater than that of the left members, and was unusual for a child of her age. Her leg was so awkward in its motions that falls were common. The hand and arm had all the peculiarities of the most perfectly typical case of chorea. The fingers were rarely still, and the arm was given to sudden and irregular activity. I cannot better describe the hand in action than to ask the reader to take as an example of its movements the last well-marked case of chorea which he may have seen. Although slow in intellectual development, the child was clever and quick, but inclined to write, sew, or make signs by preference with the left hand.

The treatment, which was unusually happy, extended over years, but as

yet it has but partially restored to the hand its needed dexterity, nor can I hope that this limb will ever be as nimble as its fellow.

I have seen a somewhat similar case, now *æt.* 17, in which there was a forceps delivery, convulsions, and *general* loss of power, with rapid restoration, good as to the left arm, but slow and incomplete as to the right arm and both legs. To this day the motions of the right arm, now as vigorous as need be, are distinctly choreal. The left arm is natural; both legs contracted; some of their muscles contracted, some were totally palsied, and, at the age of 15, she crept on her hands and knees. Dr. T. G. Morton, who saw this case with Dr. Wm. Hunt and myself, after consultation divided a number of tendons in the legs and feet, and, aided by apparatus, and after long treatment by massage and electricity, this very interesting patient walks erect, her moral and intellectual development keeping pace with the physical gain. The constant obstacle is the awkward choreal movements of the legs and the right arm, which at present constitute the real and most serious obstacle in the way of entire cure. I was struck in this case as in the last with the fact that for many years there was, with right hemiplegia, a more or less notable difficulty of speech, a difficulty not only in articulation, but in choice of words or in finding the needed word. It is now in both cases rather a trouble of articulation or of readiness in speech, than of memory of words.

CASE VIII. was a male, *æt.* 4; had convulsions from unknown cause which ended in left hemiplegia, slowly passing away in a few years, and left him, as far as power and endurance are concerned, absolutely well. Curiously enough, at the age of 16 years the right grip is less strong than the left, although he is right handed. The loss of capacity to execute with the left hand, any movement except the grossest, is most remarkable. He drops a cup or a tumbler, and fails again and again to pick up a pencil or a coin. The lack of power to direct motions is the most conspicuous I have ever seen, and is so increased by excitement or by failure that the hand then moves irregularly and spontaneously, which it never does under ordinary circumstances.

Very recently a lad was brought to me from near Pottsville, who it seems had convulsions and right hemiplegia at the age of six years. He recovered in a remarkable degree the power and endurance of both leg and arm. The leg, however, lost an inch in length, showing, as I have again and again remarked, the power of cerebral palsy in the child to affect growth. In this case there was always some difficulty as to language, but it was a trouble of articulation rather than aphasic; nor indeed have I ever seen a case of aphasia in the many well-marked right hemiplegias of children which I have met with. The age at which aphasial troubles are first to be seen would be worth knowing. He had with no losses of sensation a choreal disorder of leg and arm which baffled all efforts to overcome, so that, despite orthopædic instruments which were multiplied endlessly, he was constantly falling, while his hand was almost useless. I

had him subjected to a long and elaborate gymnastic training, and as he was fond of music he was taught the piano and violin. In some years of such teaching he came at last to have a far larger and more accurate command of the uncertain limb. He had been drugged a good deal before I saw him—and here I may as well say once for all, that in these cases, unless there is a failure of general health, the usual anti-choreal drugs, arsenic, zinc, etc., are worse than useless.

It were quite needless to multiply cases of this kind, as I might readily do. Enough has been said to illustrate the propositions with which I started. I might well have added a number of interesting cases of post-paralytic motorial disorders, but they would not have come under the heading of choreal, and I have for this reason refrained. I hope, however, before long to present in fuller form a clinical study of all the consequences, nutritive, sensory, and motor, of the hemi-paralyses, both of the adult and the child.

ART. III.—*Trembling and Loss of Co-ordinating Motor Power, as Symptoms of Nervous Disease.* By ALLAN McLANE HAMILTON, M.D., of New York.

THESE two symptoms, trembling and loss of co-ordinating power, characterize some of the most serious disorders which the cerebro-spinal nervous system is liable to, and a clear idea of their various forms as they sometimes occur, is most necessary to establish a diagnosis, and arrive at conclusions which will determine a rational form of treatment. They appear in many diseases which closely simulate each other; when the central lesions are widely different, and perhaps while one is curable, the other will never yield to the most persistent treatment.

Any condition interfering with the continuous discharge of nervous stimulation, will be characterized by tremor in remote parts of the body, or the muscle supplied by nerves taking their origin from that part of the nervous axis where the trouble exists. When this trembling occurs, the motor nerve roots are affected, while in all cases sensation preserves its integrity. The will may, or not, have power to control these motions, and in some diseases the tremors are increased instead of diminished, when an effort is made by the individual to control them.

Tremor may exist as evidence of central nervous disturbance of various kinds. It may result as a consequence of hyperæmia of the nerve centres or of molecular, chemical, or other changes such as follow the saturation of the system by alcohol, mercury, or lead. This latter form is purely a functional derangement, and the exciting cause once removed,

the prognosis is usually favourable, except when the toxic agent is mercurial. It may result as a sequence of atrophy of nerve roots or the terminal twigs of nerves themselves, as in the case of progressive muscular atrophy. It may be the result of induration or deposit of fat, and then the prognosis is most unfavourable.

Tremor has been divided by Swieten, Gubler, and other neuro-physiologists into two varieties. These are, trembling which is present when the body is in a state of repose, and this is due to an irritation of the nerve centres, and has been called the *tremor coactus*. Another form is manifested exclusively during the performance of voluntary acts, and is dependent upon want of stimulation and insufficiency of nervous fluid. This is a species of paralytic tremor, and may be called the tremor of debility, or *tremor paralysie*.

Gubler recognizes a form which consists of a succession of alternate contractions and relaxations of the muscles in play, which occur in spite of the will, and seem continuously excited by an internal stimulation. He calls this *muscular ataxy*.

It is the opinion of Eulenburg that the spinal cord is concerned in the production of tremor, and that it must be involved to produce this symptom. He substantiates this assertion by the statement that the facial muscles are never involved. I have a case under my charge at present, however, of well-marked cerebral sclerosis where tremor of the muscles of the whole left side of the face is evident. There is no indication of spinal sclerosis.

The localization, rapidity, and quality of the tremors, and the influence of the will must make up our diagnosis.

Tremors may be confined to either the lateral, upper, or lower halves of the body, or single muscles, or organs may be alone affected. The upper half of the body is most often the part attacked, and the arms and head particularly so.

The diseases which are characterized by this symptom may be enumerated as—

Functional derangements.	{	Hyperæmia of the cord and medulla.
		Alcoholism.
		Metallic Poisoning.
Organic diseases.	{	Multiple sclerosis (or " <i>sclerose en plaques</i> " of the French).
		Paralysis agitans.
		Chorea.
		General paralysis.
	{	Progressive muscular atrophy.

Perhaps the most important disease to be considered is paralysis agitans. The tremor here begins as the first symptom, usually in persons of advanced life, but sometimes in young children.

The term paralysis agitans for the species of disease which young

children exhibit is not altogether appropriate, but Hammond so defines it, however. The disease is so light, so inconstant, and so amenable to treatment that in this respect it differs from true paralysis agitans. In this form there will be found an atrophic condition of the nerve cells, and in the latter usually no constant pathological change but only a hyperæmia of the nervous substance.

The trembling of paralysis agitans occurs at all times with voluntary muscular movements, and also when the body is in a state of tranquillity; and is not entirely affected by the will except that it may occasionally be moderated. There is never loss of muscular power at any time, as may be ascertained by testing with the dynamometer; it differs in this respect from multiple sclerosis where paresis is an early and permanent symptom. The tremor of paralysis agitans sometimes involves one side, or the upper half of the body. The oscillations are rapid and regular, and Charcot uses another qualification expressed by the word "*serres*." The tremor of paralysis agitans is unassociated with sensory or intellectual impairment. The tremor is different from that of sclerosis, for in the latter there is what may be called a tremor of inco-ordination. The trembling of paralysis agitans diminishes after making an effort.

The next most serious form of trembling is that associated with sclerosis of the upper part of the cord, and the brain. With sclerosis, the trembling will usually be found in the upper half of the body. The tremors occur in opposition to the will, and increase as this power is used. All of the simple acts of every-day life are performed with difficulty. I have noticed in patients who attempted to carry drinking vessels or spoons to their mouths an inability to do so, and when the act was attempted the glass would be carried upwards, vibrating and oscillating in a lateral manner, and I have observed in a great number of cases that the movements of the hands of those persons suffering from sclerosis is usually a modified alternate pronation and supination, while the movement in paralysis agitans seems to be alternate flexion and extension. The tremor of sclerosis is nearly always preceded by paralysis, contraction of the limbs, disturbance of speech, and other symptoms occurring almost at the same time. When the head is affected Charcot and Bourneville believe the disease to be always sclerosis, and never paralysis agitans. I have seen a case of this kind in which, with the trembling, the head was drawn to the left side and inclined forwards, the right sterno-cleido-mastoid having lost all power. The tremor in this patient was aggravated when the will was exercised with the aim of diminishing it. General paralysis is characterized by trembling and quivering of the tongue, lips, and muscles of expression. Where the tongue is protruded it trembles visibly and there is difficulty in forming words. The diagnosis of this is very easy, for a rapid succession of other symptoms, and the concurrence of inequality of the pupils, ptosis, and defect in locomotion soon clears up the speculations of the physician.

Tremors in simple muscles or groups of muscles are often found as symptoms of nervous diseases. The muscles of the tongue will be involved sometimes, giving that organ an undulating movement; this is characteristic of sclerosis. In progressive muscular atrophy occasional fibrillary tremors in the peripheral muscles without shaking of the limbs are to be observed. Muscular contractions here are weakest with the occurrence of the tremor. Continuous trembling of the eyelid may be suggestive of commencing sclerosis or structural changes.

Tremor is occasionally a symptom of chorea, but the age of the patient, and the convulsive character of the jerks, which are uneven on both sides of the body, will clear up the diagnosis.

Alcoholism nearly always has a species of trembling for one of its symptoms. The trembling has a very regular vibration, is much worse in the morning, and is associated with more or less loss of co-ordinating power. Mercurial tremor, which is rare, begins in the superior extremities, voluntary movements are exaggerated, and the contractions of the flexors are strongest.

Lead trembling, which is more rare still, occurs at night, and is associated with paralysis of the extensors, and is usually preceded by colic.

Functional trembling from other causes may be diagnosed by the existence of concurrent symptoms, and from the disappearance of trembling after the administration of remedies.

Numerous experimenters have endeavoured to arrive at some way of classifying tremors, and Dr. Fernet of Paris, who has given his results in a thesis reprinted in the *Archives Générales* of November 1872, has found that by means of the myograph a muscular contraction in a state of health would make a continuous straight line on the index of the instrument, or that artificial contractions induced at the rate of 32 per second would place the muscle in a physiological state of tetanus, when the same effect would be produced. When the number of these contractions amounted to but 27, a series of oscillations occurred which imperfectly coalesced. With 10 contractions a second, the coalescence was exceedingly imperfect. The result of these experiments was obtained by artificial means. In disease a number of clinical cases demonstrated that the various tremors occurring in the several diseases I have enumerated were characterized by different tracings.

In multiple sclerosis a slight muscular contraction yields a line with regular oscillations of slight extent and taking place at the rate of 3 per second. In mercurial tremor the jerks are longer and the oscillations are not as marked. Various other diseases give different oscillations and tracings.

Fernet's conclusions are that—

The number of jerks is less in proportion as the oscillations in the line given by the myograph are more extensive. The number of jerks in a

given time in the case of any one patient suffering from tremor, either do not vary at all, or only very slightly, according to the state of rest or motion.

It is the general opinion of neuro-physiologists that the power of co-ordination is *principally* centered in the cerebellum, but there are other organs and conductors which must be normal to insure the perfection of muscular movements. The conductors which carry nervous impressions to the mind for action, the parts of sensation, the organs of special sense and their nerves of communication with the muscles must preserve their integrity, to be in harmonious relation to the gray matter of the cord, and the cerebellum which furnishes in turn a quality known as the muscular sense. For instance, we find, that, when the eyes of some persons afflicted by certain nervous diseases are shut, the muscles concerned in the preservation of the equilibrium of the body will be found to have lost their power and the patient topple over unless supported. Any sensation or impulse imperfectly sent to, or received by, the nervous centres may be the cause of improper co-ordination.

Brown-Séquard, however, has proved by careful experiments that the spinal cord itself may be also the seat of co-ordination; that the irritation of certain parts of the lumbar portion will be followed by inco-ordinate movements of progression when the animal begins to walk, and that these inco-ordinate movements are brought about by the failure of concerted action on the part of muscles receiving their supply from below the irritated part.

The existence of inco-ordinate movements when that part of the intellectual apparatus devoted to perception and will is so perfect as to receive impressions, and still unable to exert sufficient control over the peculiar want of muscular harmony, suggests somewhat strongly that the trouble is to be found in some region which is a sensor, and not a distinct intellectual centre.

The phenomena of reflex action where sensations may be received, and motor impulses transmitted, such as follow decapitation of the animal, show us that it is not necessary for the cerebrum or cerebellum to be in working with the other parts of the nervous apparatus.

Most of the movements that are affected or changed, may be said to be automatic, and the greater number of the muscles take their nerve stimulus from the cord itself; even the tongue is animated by nerves starting from the upper part of the cord. I doubt, therefore, if there has been any case of lost co-ordinating motor power, where there have not been lesions of the cord and usually of the gray matter, or posterior columns.

The relation of the organs of special sense to properly co-ordinated movements is patent to every one. Here again I am of the opinion there is some interruption in the transmission of the nervous force which is guided by impressions received by these senses, either in a delay of action

on the part of the cerebellum, or an interference of the functions of the anterior columns, so that properly guided cerebral mandates are not sent to, or obeyed by the motor nerves.

The cerebellum of course plays an important part in the harmonization of all movements, and this Dalton and other eminent and experienced observers have conclusively shown, but Lockhart Clarke, Hammond, and various neuro-pathologists show this to be but a temporary suspension of co-ordination, and some writers go so far as to state that this is not a loss of co-ordination at all, but simply a species of vertigo.

Van der Kolk considers that the removal of the cerebellum has the effect of violently irritating a layer of gray matter containing multipolar cells, which lie between the motor fibres passing from the corpora pyramidalia through the pons to the crura cerebri, and the transverse fibres of the pons, where they decussate; there irritation is reflected by the transverse fibres upon the corpora pyramidalia, and inco-ordinate movements result. Van der Kolk has never seen a loss of harmony in muscular movements with diseases of the cerebellum, when the irritation of that organ was excessive.

In every individual there are a number of movements which are automatic; even the act of walking may be performed when the will and other intellectual qualities are dormant; and the most complex acts, such as the playing of musical instruments and the use of tools, may be counted in this list.

The human being at a very early period of his existence begins to walk and perform the muscular movements of every-day life without any mental guidance in the beginning; afterwards the mind becomes trained and developed and the number of these movements becomes more complicated as intelligence enters into the work. A great part of the ability to do these is accomplished by instruction. All movements become automatic to a great degree as the individual advances in years. The incapacity of the nerve centres to supply or receive the normal sensations, where induration or degeneration occurs, destroys their automatism, and I am convinced that loss of co-ordinating power depends to a great degree upon the disturbance of the automatic state.

The different kinds of inco-ordination are shown: *a.* In speech. *b.* In the movements of the upper limbs. *c.* In the movements of the lower limbs. *d.* In the loss of location.

When speech is affected, so that the patient finds it impossible to frame perfectly formed words, we may infer that the disease affects the upper part of the cord. The speech is slow, and there is a pause between the articulation of each syllable; the consonants *l*, *p*, and *g* are pronounced with difficulty, and sometimes the other consonants are substituted. The muscles of the tongue are uneven in their contraction; and the person speaks, to use a homely simile, very much as if he held a hot potato in

his mouth. The words are jerky, some of them pronounced plainly, and others with great difficulty and indistinctness. This symptom must not be confused with the condition characterized by the substitution of wrong words, or simple paralysis of the tongue, nor confounded with the disturbance of speech which is observed as a symptom of paralysis agitans where the words are only pronounced slowly.

We find that when the lesion is in the upper part of the cord, there are certain defects in co-ordination shown most clearly in the upper extremities. The seizure of objects is attended with considerable difficulty. It is impossible to perfectly perform the act attempted. The patient in carrying his fork to his mouth will usually run its tines against his cheek or even miss the head altogether; with this there will be loss of power, and ultimately contraction of the limbs.

One variety of loss of co-ordination rarely dependent upon any serious pathological change, is seen in the disease known as writer's cramp. When the patient attempts to write, the first part of the word or first words of the sentence will be written properly, but suddenly the pen will fly off, and the more the will is exercised, the more the symptom will be exaggerated. The patient may educate the other hand to the work, but the same state of affairs usually follows in a short time. There is rarely paresis, and the trouble is purely a functional one. Russell Reynolds believes it to be what he calls "secondary automatism." It is indeed a hyper-education and use of the muscles used in one kind of act. Other movements may be performed requiring the utmost delicacy of manipulation, with ease. The disease is the result of a depressed nerve tone.

When we consider the inco-ordinate movements of the lower extremities, we are indeed puzzled by their complexity. The two forms of failure to co-ordinate in locomotion which are important, are paralysis agitans and locomotor ataxia. The history of the case and the consideration of the combined symptoms will enable us to arrive at some clear idea of the disease.

The progressive movement in paralysis agitans is a species of *festination*. The patient inclines his body forwards and seems impelled to run, there being no resemblance to locomotor ataxia of the gait itself.

The gait of locomotor ataxia is characterized by the peculiar jerky extension of the foot. The force of muscular movements is increased to such an extent that the feet are thrown out and the heels come down with a thump. The muscles of the thigh participate in this general failure, and I have found in several cases that the adductors of the thigh have undergone a marked impairment of power.

There are defects of co-ordination which are interesting in this disease, and one is the difficulty of going down inclined planes. In turning about during the walk the patient will generally find it impossible to stand. It is almost useless for him to attempt to stand on one foot. When sclerosis

has its seat in the lateral column, Hammond describes the walk as being associated with a lateral swing of the body, and the patient glides always in a serpentine manner, the extensor muscles not having power to lift the feet from the ground.

The inco-ordination of muscular movement in alcoholism is always associated with delusions. There is also a species of loss of co-ordination which occurs with the early stages of general paralysis; the acts of sewing or writing are impossible.

Loss of co-ordination may be found by several tests to which the patient may be subjected, but as every one is familiar with these, I will only allude to them in a general way. One which Wunderlich and Romberg considered conclusive is the inability to stand with the eyes shut. The patient brings his heels together, and shuts his eyes, when he will immediately topple over and fall. This may be detected when sclerosis of the posterior column of the cord exists to a very slight degree, by a swaying to and fro of the body.

The location of places is lost when there is sclerosis, and it will be impossible when the senses do not guide the patient for him to exactly find any small spot with the tip of his finger when his eyes are closed; for instance the tip of his nose.

If his legs are changed very rapidly from one place to another, he will find it almost impossible to locate their final position when they are at rest. When the mind is detracted from the body, as occurs when the patient is reading, he will, when unexpectedly asked, be unable to tell where his feet are. For instance a patient now under my charge, when lying on the sofa reading with his feet higher than his head, will begin to make some change supposing them to be upon the floor or on a level with his body.

These symptoms occurring with others will always enable us to approximately arrive at a diagnosis. Sclerosis, whether diffused or spinal, is symptomatized notably by marked inco-ordination and trembling. Paralysis agitans comes next, and we may direct our attention to these primarily in nearly every case.

ART. IV.—*Historical and Analogical Record of the Siamese Twins.*

By ROBERT P. HARRIS, M.D., of Philadelphia. (With a wood-cut.)

Nativity, etc.—Eng and Chang were of Siamo-Chinese blood, as are many of the three millions of inhabitants of Siam. Their father was born in China, and spoke the Tai-cheu dialect, went into Siam, and married a native woman whose father was Chinese, and mother Siamese, thus causing the twins to be three-quarters Chinese blood, and accounting for their dark

colour and Chinese appearance; the pure Siamese being a bright gamboge-yellow like colour. They were born at Mā Klaung (*Meklong*), a small fishing village, some sixty miles southwest of Bangkok, the capital. Their parents were well built, of medium Chinese height, and belonged to the poor class of *boat inhabitants*, living in small floating houses, moored along the banks of rivers; of whom there are great numbers in Siam. The mother of the so-called *Siamese* twins was about 35 years old at the time of their birth, and of a complexion resembling that of the Chinese rather than Siamese. She is said to have brought forth four female children prior to the "twins," and to have had a family of fourteen in all; ten of them being twin births. No special inconvenience was experienced during her period of gestation, and she declared upon several occasions that Eng and Chang were delivered reversed, the feet of one, and head of the other being together, and that there was no marked difficulty in their extrusion, as they were quite small. In corroboration of this statement of the presentation of the twins, it has been repeatedly affirmed by them that in early boyhood, and up to the age of ten or twelve years, they very frequently assumed a reverse position, with the head of one towards the legs of the other, when at play upon the floor or ground.

It will be noticed that we have reversed the usual order of the names of the twins, going back to that adopted in Europe many years ago, when Eng was given the precedence, as the larger of the two, and standing upon the right. We see no reason why Chang, simply upon alphabetical principles, should be most prominently named, when, by so doing, it only leads to error and confusion in describing them in a distinctive sense, as to physical condition, peculiarities, etc. We have, therefore, resumed the order under which there can be no possibility of mistake. *Eng* (meaning *right*), being the larger, taller, stronger, more healthy, least deformed, and placed upon the right, is named first, as we conceive for these reasons he very naturally should be. In the *Ritta-Christina*, Ritta was on the right, and for this reason was named first.

Eng and Chang were quite feeble at birth, and for the first six months of their infancy. Chang was then the larger and became the more healthy boy of the two, Eng being rather delicate for some years; after which he in turn grew to be the more robust, and so continued throughout life. The exact date of their birth cannot be ascertained, although when exhibited in Philadelphia from Oct. 6 to 10, 1829, their exhibitor gave it as May, 1811. Their parents in after years, when questioned by one who spoke their language, were not so definite, and said that it was either in the latter part of 1811, or beginning of 1812. They were, therefore, as near as can be ascertained, about 62 years old at the time of their death (Jan. 17, 1874), an age very far in advance of any other diploteratological specimen upon record. It has also been stated that at the time of their birth it was with some difficulty that their lives were saved from destruction by order

of the king, who held a very prevalent superstition, that such freaks of nature were portentous of evil to the reigning power, numerous evidences of which may be found in the histories of monsters.

Discovery and Removal from Siam.—Their existence was first revealed to the civilized world by Mr. Robert Hunter, a British merchant residing at Bangkok, who met with them when boys of twelve or thirteen years of age, in the year 1824, as they were boating, stripped to the waist, on the river Menam, not far from the capital, where their parents then resided; being attracted toward them by their strange appearance in the distance at night. He made various unsuccessful attempts to gain permission to take them to England; and finally prevailed upon their parents and King Chowpahyai to let them go. They set sail on April 1, 1829, in the ship *Sachem*, Captain Coffin, via Boston, which port they reached in August. Here they were carefully examined by the late Prof. John C. Warren, M.D., of Harvard College, the first physician to make an exploration of their bond of union, and an investigation into their special mental and physical relations with each other. The results of his observations were sent in letters to several prominent editors of medical journals in this country¹ and in England. At that time, Eng was about 5 ft. 2 inches high,² and Chang half an inch shorter. They were believed to be eighteen years old; wore very long, black queues, wound thrice around the tops of their heads coil within coil; and presented the characteristic features of the Chinese race, being, as before stated, but quarter-blood Siamese.

Migrations, etc.—Having remained eight weeks in the United States, divided between Boston, New York, and Philadelphia, they set sail directly for England from New York, October 16, and reached London on the 20th of November, 1829. After a tour of exhibition, and being disappointed with the cold damp climate of England, they returned in a few years to this country, which from that time became the home of their adoption; and finally assuming the family name of Bunker, settled upon farms in North Carolina, where they resided at the time of their death.

Not being permitted to visit France, upon their first European trip, although much effort was made in Paris to get them admitted, especially on the part of Coste, the embryologist, they made a second attempt in 1835, which proving successful, we find due notice of their appearance and peculiarities, in several of the Parisian medical periodicals of 1835-'36. We presume the cause of opposition to their being exhibited, was that which prevailed against the *Ritta-Christina*, in Paris, in 1829, viz., a

¹ See Am. Journ. Med. Sci. for Nov. 1829, p. 253, where will also be found an excellent representation of the twins.

² Eng finally reached a height of 5 ft. 5 in., and was $1\frac{1}{2}$ in. taller than Chang. This difference was almost entirely between the band and the tops of their heads. Chang, if straight, would have been about 5 ft. 4 in. He became more crooked after his attack of paralysis, in 1869.

popular impression that a sight of them might cause some of the French women to breed abnormal children of a similar type; an opinion that is by no means confined to France, nor excluded by the medical profession, as the reports of cases of monsters in medical journals will from time to time evince.

After an interval of 33 years, the twins, in 1869, made a third trip to Europe, which was much heralded at the time, and becomes now a matter of historical interest, because it was stated that they went mainly with a view to consult leading Surgeons of Great Britain and France, as to the propriety and feasibility of an operation for separation. It is true that with this apparent intent they did present themselves as proposed; and that they were examined by Sir Henry Thompson, Sir William Fergusson, Prof. Syme, Sir James Y. Simpson, Prof. Nélaton, and others: but the real cause of this journey was to retrieve their lost fortunes, using these examinations as a scheme whereby to secure a free notice by the press and a larger attendance on the part of the curious at their exhibitions, a *ruse* often practised by them in former years under direction of their agent.

We will find by reference to the leading medical journals of 1829, '30, '31, '36, and 1869, the most elaborate articles that have appeared in reference to their peculiar manner of union, and the cases which most closely resembled it. It is questionable whether the Siamese Twins ever fully realized the inconveniences of their attachment, or *sincerely* desired to be separated. When the late distinguished Naval Surgeon, Thomas Harris, examined them at the Masonic Hall in Philadelphia, in 1829, and hinted at the propriety of an operation for separation, Chang, who from early childhood was never remarkable for his amiability, tried to kick him, as a mark of disapprobation of the proposal. It is true that many years later, under the feeling of antagonistic hatred engendered by a quarrel, they did desire their family physician to cut them apart; but whenever questioned in calm moments, declined the office of the Surgeon. How much may have been due to fear of suffering, or of a possibly fatal result, we cannot tell; but the excuses framed by them appear to have been largely based upon a want of appreciation of any happiness to be obtained by an independent existence, believing themselves to be quite as much in the enjoyment of it as those with whom they came daily in contact. A part of their objection may have also arisen from their notoriety as a curiosity giving them a certain living, in the event of being by any means reduced to poverty; and an antipathy to parting with their world-wide fame, from a species of pride, which, although unaccountable, nevertheless prevails to some degree with the congenitally deformed. Had they been successfully separated in adult life, at their own request, we should have seen all their individual physical defects very prominently brought to notice.

Individual Physical Defects.—From somewhat early life Eng was the

larger, taller, and stronger of the two; but both were unsymmetrical in development. Chang was noticed as long ago as 1830, to have a very marked right lateral curvature of the spine, bending his chest over to the left; and this in later years was accompanied with an increased obliquity in the line of elevation of the shoulders, the left being much depressed below the right. In an independent state, he would have walked obliquely to the left, with his left foot turned outward and right inward, his head bent over to the left, and face directed to that side; and it is exceedingly doubtful whether he could ever have recovered from the effects of early necessity, and the abnormal development of his joints and muscles, so as to enable him to walk directly forward.

In a reverse direction, the same remarks will hold good as to the walking of Eng, who, although much more erect, would have had the same locomotive defects to contend with. The right arm of Eng, and left of Chang were better developed than their opposites, and the left shoulder of Eng, and right of Chang, much the wider, from the spine, to the end of the acromion process of the scapula.

The necessity of always looking obliquely forward, affected the sight of their outer eyes from quite an early period (noticed by St. Hilaire, in 1836); probably from childhood; and this became so marked late in life, that with these eyes alone, they could scarcely distinguish any object. Chang was rather deaf in both ears, but the hearing of the brothers was most defective in the opposing ones. The outer legs were stronger and better developed than the inner ones, as the latter had much less freedom in walking. All of these defects were the result of a relative position assumed in childhood, and maintained throughout life. This also had the effect of making the opposing side of their chests *absolutely* flat; which was compensated for by a greater degree of convexity than normal upon their free sides. It can readily be seen, that in a separated state each would have probably been under the necessity of learning to walk; and would have presented a singular gait and figure, as compared with normal subjects.

Theories of Union.—Considered in a teratological sense, Eng and Chang belonged to the genus Omphalopagus (ομφαλος, the navel, and παγω, I fasten); and to the variety, Ziphodidymus, (ξίφος, a sword, and διδυμος, a twin); according to the classification of Dr. George J. Fisher, of Sing Sing, New York. There are many varieties of the omphalopagus genus, the most frequently to be met with of the homologous duplex twins reported in medical periodicals. They are rarely born alive, and when so, seldom survive more than a few hours or days. In these *ventre-à-ventre* unions, the connecting cartilages may be seated at the upper portion of a narrow isthmus, containing only the umbilical vessels, some interlacing fibres from the two diaphragms, and connective tissue; or the bond of union may involve the thoracic and abdominal cavities, so as to make them common

to each, as low as the umbilicus, or it may be lower; within which will be found two or four lungs, two hearts or a double one, a single or double liver, connecting stomachs, one or two spleens, two or four kidneys, one or two sets of small intestines, the single one ending in a double caput coli, from which arise two large intestines, one for each foetus, etc.

We may consider it fortunate that these extensive vital inter-communications are much the most common; and that those of a type to render an operation for separation, a subject for question, so rare that but one or two are reported in a century. During the last two hundred years but three cases are known to have been met with, of a class to render an operation at all possible, without a rapidly fatal termination; the whole of the remainder having such intimate connections, that the knife or ligature were not for a moment to be thought of. Even in the cases where no important vessels or viscera traverse the band, there is a considerable risk of a fatal result from inflammation of the incised or ligated parts, extending into the veins or peritoneum.

The cause of the formation of duplex twins must of necessity be largely hypothetical, and for this reason, very dissimilar views have been and are held by embryologists, as to the primitive condition of the ovum or ova producing them. The following are the theories in dispute.

1. That there are two distinct embryos, or germinal traces in one ovum, which become united in the course of development, and that these are parallel in the omphalopagi, and become one at the centre of contact.

2. That there is but one germ, which becomes double by a process of division.

3. That the ovum is abnormally compound from the beginning, and the organs and parts composing the double monster are at once produced from the germ, without either separation or coalition of parts, other than belong to the natural process of development.

Each one of these theories has had its strong advocates; but the first is that now generally held by teratologists, especially as regards homologous duplex twins. We are not of those who believe fully in the general application of this law to *all* forms of diploteratological cases, for some of them are much more readily explainable on the basis of an originally abnormal germ. If the *trace* which produces an inherited redundancy of parts, as where six well formed fingers and toes are obtained by the parental impress, may be rated abnormal to the extent of the redundancy, why may not a greater degree of the same condition in the ovum account for many of the varieties of monsters by redundancy, as provided for in the third theory?

It is well known that a duplex germinal trace has been observed in a single-yolked goose egg; and that double-yolked hen eggs have been repeatedly experimented upon by incubation without producing duplex

birds. It is a very satisfactory theory that the union of two parallel *traces* will produce such examples as the Siamese, Hungarian, Hindoo, and Carolina twins; that convergence of one or other extremity of the germs will by union account for many other forms; and that numerous sub-varieties result from irregularities of approach; but beyond and above all these are the cases which cannot be satisfactorily explained, without making an exception in favour of the theory of abnormally compound germs.

Dr. Fisher¹ says, "that the origin of *all* double monsters is *now known* to result from the development of two embryos, on the vitelline membrane of a single ovum, and *all their forms* to arise from the relative position and proximity or remoteness of the primitive germinal traces." To make this theory of universal application, we must account, in some instances, for the almost total disappearance of one twin germ, leaving but a distal fragment engrafted upon the otherwise normal body of the other, and in almost all instances attached to a corresponding structure. Such cases are more readily accounted for, upon the theory of an originally abnormal germ, than that of union by approach.

M. Coste,² the celebrated embryologist, examined the Siamese twins on the occasion of their first visit to France, in 1836, and in a note to the Académie des Sciences, expressed the opinion that they must have become united in the latter days of the first month, and when consequently they were not yet two lines in length. *He believed that their viscera were independent*, and that an operation of severance would probably have a favourable termination.

M. Le Sauvage,³ of Caen, France, who claims to have been the first to elucidate the primary condition of the formation of double or diplogenous monsters, says: "I have demonstrated that no junction can be established, except where two germs have been developed in a single ovule, and that then the two embryos must be contained in a common chorion; that they are constantly of the same sex; and that their coalescence is determined by the previous union of the two umbilical cords, the umbilicus always becoming, as it were, a point of departure for the adhesion." He calculates the time of the adherence of the Siamese brothers, as from the 15th to 20th day of intra-uterine life. From the tolerance of torsion in the band in early childhood, whilst the cartilages were soft, he formed an opinion that the connection was mainly areolar tissue; that as their development was normal, their umbilical vessels must have had a regular direction and growth to accomplish it: that "at the moment of union of the two embryos, the two intestinal masses in a rudimentary state were still contained in the membranes, and the regular direction of the umbilical

¹ Trans. N. Y. State Med. Soc., 1868, page 279.

² Journ. Hebdomadaire, 1836, vol. i., page 55.

³ Archives Générales de Médecine, 1837, vol. ii.; 2d Series, page 71.

vessels should lead us to think that they had been especially transmitted into each abdomen, which excludes all idea of communication between the intestines."

Diagnostic Examinations of the Bond of Union.—In view of the post-mortem revelations, this portion of our historical record becomes of peculiar interest, as it is natural for us to desire to know how nearly correct were the physical explorations made during life, in determining the anatomy of the band.

Prof. John C. Warren,¹ previously quoted, says of it: The upper part is hard, and composed of the ensiform cartilages, which appear to meet at an angle, and to be connected by a ligament, so as to form a joint. The breadth of the cartilage is an inch and a half, and thickness about an eighth of an inch. This joint appears to open and shut according to the position of the twins. "There is no doubt a network of bloodvessels, lymphatics, and some minute nerves passing from one to the other" . . . "Another question which has presented itself in relation to them, is whether it would be possible to separate them from each other with safety. There seems to me nothing in the connecting medium which would render such an operation necessarily fatal. *It is not impossible that the peritoneum is continuous from the abdomen of one to that of the other.* The division of this membrane would involve some danger, though not very considerable."

The late Prof. Valentine Mott, of New York, and Dr. Thomas Harris, U. S. N., of Philadelphia, examined the twins subsequently in their respective cities, and privately expressed a somewhat similar opinion.

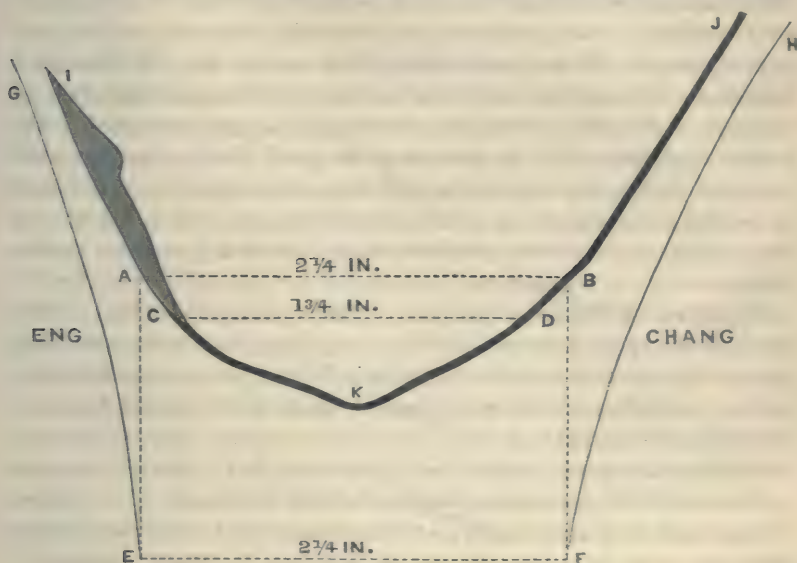
Sir. Astley Cooper examined them in London, in 1830, a few months after Dr. Warren, but does not appear to have been at all searching in his investigation, as he said that the band was composed of the ensiform cartilages, skin, and areolar tissue. He evidently was not at all satisfied as to its true nature, for he was not willing to say that he would be ready to operate if called upon; escaping from the inquiry, by turning the matter of *attachment* into a pleasing joke.

George Buckley Bolton,² M.R.C.S., presented (April 1st, 1830) a very elaborate report to the Royal Society of London, in which he says: "Under the cartilages, while they stand in their ordinary posture, are *large hernial sacs opening into each abdomen*, and into which on coughing, congenital herniæ are forced; probably in each boy formed by a portion of the transverse arch of the colon; generally, however, and under ordinary circumstances these herniæ are not apparent. Whether there is a communication between the two abdominal cavities, or a distinct peritoneal sac belonging to each hernia, is by no means obvious." . . . "When these her-

¹ Amer. Journ. Med. Sciences, Nov. 1829, page 253.

² Philos. Trans. 1830, page 177.

næ protrude, their respective contents are pushed forward *as far as the middle of the band.*" Mr. Bolton took several careful measurements of the band, with the twins standing face to face, as they are now represented in the cast, in the Mütter Museum of the College of Physicians, of Philadelphia, and gave its dimensions as follows: length at top $1\frac{3}{4}$ inches, at bottom not quite 3 inches, vertical depth $3\frac{1}{4}$ inches, and thickness $1\frac{5}{8}$ inches.



Very great discrepancies exist in the measurements taken at various periods by different observers; and yet there is every evidence to show that traction did not elongate the band, and that if it grew at all, between 1829 and 1874, it was not more than a quarter of an inch. Prof. Warren made the measurement at the top of the band in 1829 *two inches*. We make it now *two and a quarter*. There is a difficulty in exactly defining the points at the top of the band from which the measurements should be taken. Eng on his side presents a thick welt of skin at the sterno-xiphoid angle (see Fig.); and on Chang's there is little if anything to mark the point; but placed face to face there is a well defined angle on what is usually the anterior side of the band, where it leaves the thorax, and especially marked on the side belonging to Eng. The measurement here is $2\frac{1}{4}$ inches. If we carry up a vertical line on either side, we shall get the points required upon the top of the band, as here marked out. I K J, represents the curve of the top of the band, viewed laterally. E F, is the anterior measure where the points are well defined. A B, is our line of measurement; C D, we presume to be that of Bolton. G E, and H, F, represent the lines of thoracic curve from above downward, that of Chang being the most convex.

Sir James Y. Simpson, in 1869, gave the top measurement of the band as $4\frac{1}{2}$ inches, which he must have obtained by following the curve, as the direct distance from sternum to sternum does not attain this measure, until we reach a point $3\frac{7}{8}$ inches above the centre of the band. As he also makes the vertical measure $3\frac{1}{2}$, and circumference but $7\frac{1}{2}$, thus allowing for a thickness of only one-quarter of an inch, we must infer that his measurements were very imperfectly made. A vertical section of the band, represents an irregular oval, with its large extremity upward and obliquely forward, and with the greater convexity on the anterior side. The diameter from above downward as taken from the cast, is the same as that given by Bolton, *i. e.*, $3\frac{1}{4}$ inches. The transverse is 2 inches, and circumference $8\frac{5}{8}$. A horizontal section of the thoraces at the point of union, resembles the figure of two playing-card hearts, one larger than the other, with their apices elongated and close together, and contiguous sides flattened to a straight line, so as to bring their bases much more nearly in a side by side position.

Mr. Mayo,¹ Professor of Anatomy, King's College, London, (1831) stated, as the result of his investigations, that, "when either of the brothers coughed, the bond of union swelled in its whole length, proving that they had but one peritoneal cavity." See deductions of Vrolik, and Simpson, to be hereafter referred to.

A French observer,² (1836) over the initials E. L., says: "You can penetrate with a finger by the umbilicus into the abdomen."

M. Dubois³ (d'Amiens) made a very voluminous and chiefly psychological report to the Academie Royale de Medecine, in March, 1836. He formed an opinion that the abdominal cavities did not communicate.

M. Le Sauvage, (1837) previously quoted, was of the same opinion. He says, "I have positively established by all the facts of monstrosity by inclusion (in which the inclosed fœtus is always placed without the peritoneum) that this membrane does not cover the interior of the abdomen until after the arrival of the intestines; the reasons which have led to establish the isolation of the intestines, should have the same value as to the peritoneal membrane." On these grounds, he fully believed in the feasibility of separating the twins, and says: "The most difficult point, and one which requires the most attention, is the division of the complex umbilicus; it being there only, that we might fear to open one or other abdominal cavity. To avoid this grave inconvenience, I think we might separately divide the superior portion of the band, wait the cicatrization of the surfaces, and then include the remainder in a moderately tight ligature, with a view to produce at first, inflammation with gelatino-albuminous exudation, of the portions of peritoneal membrane which might be

¹ British and Foreign Med. Rev., 1841, vol. xii., p. 378.

² Journ. Heb. des progress des Sciences Med., 1836, vol. i., p. 30.

³ Memoirs de l'Academie Royale de Med., vol. v., p. 577.

included in the ligature; then their healing, and afterward the obliteration of the opening of one of the cavities, before the section was finally produced by the ligature.”¹

Prof. W. Vrolik, of Amsterdam, (1841) in his work upon Double Monsters, takes up the subject of the Siamese twins, and expresses the opinion that they were most probably connected by some of the abdominal organs. He brings in illustration the figure of a closely analogous double foetus (so far as outward conformation is concerned), and shows that in it *the two diaphragms met in the bond of union*, and were connected by a kind of third central tendon at the point of the united ensiform cartilages. *The peritoneums were separated*; but from each of them there was sent down near the middle of the bond of union, a prolongation, forming a kind of coronary ligament to a considerable portion of liver, which passed across the bond, and *connected the main masses of the livers to each foetus*. All the other organs were completely separate.

Sir James Y. Simpson,² of Edinburgh, (1869) examined the twins with much care, upon the occasion of their last visit abroad. He attempted to illuminate the band by means of a powerful light placed behind it, but it proved to be too opaque. He tested their vascular connection by giving a dose of iodide of potassium to Eng, and then, after sufficient time, examining the urine of each by the starch test for iodine. This gave the characteristic colour with that of Eng, but no distinct trace with Chang's; a result which corresponded with the experiment made by Bolton, in 1830, under the effect of asparagus, given at one time to one, and at another to the other.

Prof. Simpson made his examination under great advantages, having had the experience of all those who were his predecessors to direct him in his explorations. He says:—

“That a large segment of peritoneum enters into the composition of the band on either side, is easily ascertained by touching it below, or laterally, and feeling the full impulse of bowel sent into the band, when the individual on that side coughs.” “That the peritoneal cavity extends entirely through the band is more doubtful.” “When you place your finger on the lower surface of the band, and the cicatrix of the umbilicus there, if the brother on the right coughs, he sends an impelled portion of bowel not only up to, but beyond the point touched; and in the same way, if the brother on the left coughs, the impelled bowel passes somewhat apparently to the right, beyond the site of the central umbilical cicatrix.” He refers to the opinion of Bolton and says: “*The hernie project on either side beyond the middle, though possibly an oblique dissepiment of peritoneum may divide them.*”

It will be seen from the various opinions we have recorded, that the nature of the connecting band was very closely determinable by careful examination, and teratological analogy, during the lifetime of Eng and Chang. Observers differed very materially in their conclusions; for they varied in teratological knowledge, in their mode of physical exploration,

¹ Op. cit.

² Brit. Med. Journ., Feb. 1869, pp. 139 and 232.

and in the position in which they placed the brothers in relation to each other at the time of examination. The effect of the cough test was first discovered in this country, at a time when one brother had a severe cold, and was under medical treatment, after which it became a common mode of investigation. The lower peritoneal pouches were recognized in this way, but the upper were not found, because of their being hidden in large measure beneath the ensiform bridge. The connections between the diaphragms and livers not being recognizable by palpation, their existence was a matter of inference, based upon analogical cases, in which these organs have been found almost always united.

Prof. A. B. Cook,¹ of Louisville, in his paper upon "Joined Twins, their Obstetrical and Surgical Management," appears to hold to the belief that the livers were united, and says that a bond of union between livers might be much attenuated by pressure and tension, and speaks of the tolerance by the liver of such treatment. In the cases reported by Zwinger and Böhm, to be hereafter referred to, there does not appear to have been any hepatic connection, but in both the connecting band was much smaller proportionately than in the Siamese twins; and with their exception, very unique in character as compared with the generality of xiphopagous subjects. The length of the connecting band in cases of the type of the Siamese twins, must always be limited, as there can be no elongation beyond the combined measurement of the antifixed ensiform cartilages. But for this, the length would no doubt be gradually extended under the influence of constant traction. It has been thought by some that Eng and Chang had no true intervening band at birth, but that this was gradually developed by tension. This must be an error, if the position in birth has been correctly given, and their story of torsion in the plays of childhood is well founded. The fact that the ensiform cartilages are united end to end, would appear to indicate that a short, but regularly developed band existed at birth; and besides, the unavoidable tension of one foetal ellipse upon the other in utero would produce a band, where the union was as circumscribed as in the case in question, or its analogues reported by Zwinger and Böhm.

Whether the peritoneal pouches became gradually elongated or not, we cannot say, as they were independent of any external change; but the different testimonies of Bolton, in 1830, and Simpson, in 1869, would appear to indicate a prolongation of this kind beyond the central line of the band, which seems to have been their limit at the time of Bolton's examination. The attenuated character of the portal isthmus was no doubt, in some measure, due to the constant pulling of one liver upon the other, from gravity, position, and the respiratory movements; although from the small size of the whole connection between the brothers, it must have always

¹ Richmond and Louisville Journal, Jan. 1869, p. 65.

been quite an insignificant portal link, as compared with that found in ninety-nine hundredths of the omphalopagi.

Of omphalopagous twins, the Siamese appear to have very far outlived all their duplex analogues. The Hindoo sisters' described by Dr. Andrew Berry, lived to be nearly seven years old, and we have not been able to find an example of an intermediate age. In the Hindoo twins the union was a very extensive one, the girls standing directly face to face, with the tops of their sternums but $6\frac{1}{2}$ inches distant from each other, and pubes $8\frac{1}{2}$ inches. They were not examined after death, but as one was for some time nourished in infancy through food taken by the other, it is more than probable that their stomachs, and, judging from analogy, many of the viscera communicated, or were of double form, as the heart, liver, etc. They were well developed and active, but were obliged to walk sidewise, and to sleep facing, as they had no power to assume an oblique position. As appears in all duplex twins, one was much more robust than the other; but in this case the death of the stronger preceded that of the weaker, instead of the reverse, which appears to be almost universal in diplogenous cases.

Operations upon Xiphopagous Twins—The only instance of separation which resulted with entire success to both infants, is that which has been handed down from one writer to another, as the "König case;" and occasionally as the "Zwinger case," according to the volume of the *Ephemerides* originally consulted; Dr. Emanuel König having reported it in brief with a plate, in 1690, Dec. II. An. viii. page 305; and Dr. Theodore Zwinger (*Zwingerus*) much more minutely, in 1691, Dec. II. An. ix. page 291. The fact is that neither of these physicians delivered the mother, or operated upon the children, a midwife having attended to the first, and Dr. Fatio, the second, who also furnished to Dr. Zwinger the statement given under his name. It has also been said in ignorance, that this operation was not well authenticated; when the fact is, that all the details of the case, and the names of the parties engaged, with their positions, etc., are carefully recorded, showing that the witnesses were numerous and reliable. To avoid confusion of titles, we will speak of the case as that of

The United Swiss Sisters, reported by König, and Zwinger, and successfully separated by Dr. Fatio of Basle, in 1689.—We do not propose to translate the original account of Dr. Fatio, with the high-sounding titles he has given to the physicians and surgeons present at the first operation, and distinguished citizens in addition at the second, except to a very limited degree, preferring to condense and simplify the language so as to give a plain statement of the case as follows:—

"The most illustrious, etc., Dr. Emanuel König, gives an account in the *Ephemerides*, An. viii. 1690, of the wonderful birth of twin girls, born joined together; but since *he was not present at the consultation*, in which

¹ Trans. Med. Chirurg. Soc. Edinburgh, 1821, vol. 2, p. 35.

the mode of separation was discussed, he has been pleased to give me [Dr. Zwinger] an account written by the operator himself, Dr. Fatio, as follows :”—

Clementia M., wife of Martin D., aged 42, mother of three children born singly, gave birth to twins joined at the umbilicus, at Huttingen,¹ in the diocese of Basil (Basle), on November 14th, 1689, after a labour of not more than two hours. Their father had them baptized Elizabeth and Catharine, and on the next day took them “to the house of Dr. Samuel Braun, a surgeon of no small reputation, and asked of him professional aid.” Dr. Braun called Dr. Fatio in consultation, and they, on account of the peculiarity and importance of the case, obtained the additional opinions of Drs. Nicholas Eglinger, Theodore Zwinger, Francis Plater, and Frederick Bauhin.

The connecting band is stated to have been formed by a coalition of the xiphoid cartilages, and umbilical vessels, surrounded by areolar tissue, and covered with skin, with a very thick umbilical cord attached to its lower surface. It measured an inch and a half in length, one inch in thickness, and five inches in circumference, which would give a vertical diameter of about two inches. The double funis had been cut and tied by the midwife, at a length of about eight inches, which was found of advantage in the method of operation adopted by the consultation. This was to separate the cord up to its division in the band, tie the vessels to prevent hemorrhage, ligate the band below the cartilaginous link, and when the ligature cut its way out, sever the cartilages by incision.

The description of Dr. Fatio in the original Latin, although very minute, is rendered obscure by the use of newly devised terms, and anatomical expressions of doubtful meaning, so that we are obliged to recur to the intention to decipher the steps of the operation. It would appear from what he states, that when the children cried the band above the umbilical junction “*appeared thick and swollen*,” and that between this and the united cartilages was an almost imperceptible “*isthmus*.” The first of these would lead us to believe that there might have been hernial protrusions into the band from either side toward the umbilical ring ; but the examination of the context does not throw any light upon the meaning of the term “*isthmus*,” which is used in two other places, in a way to indicate that it did not apply to a connection of any note, and did not represent a union by a band of homogeneous tissue as in a hepatic isthmus. In the sections of the band given in König’s plate (An. viii.), nothing is represented but the cartilages, vessels, areolar tissue, and skin.

After the cords were separated and tied, Dr. Fatio perforated the band with needles, and ligated all below the ensiform bridge, using a second ligature of six wires, thrice carried around, to be tied tighter and tighter, until all the included parts were divided. The ligature having fallen off in nine days, the ensiform connection was severed by a bistoury on November 23d, 1689, in the presence of several physicians, surgeons, and distinguished citizens of the town of “Basil.” The parts healed in ten

¹ Probably the present Hattingen, 4 miles north of Basle.

days, and six months afterwards the twins and mother were reported as in good health.

The report of this case by König, having been issued with a plate, appears to have attracted the attention of observers, who from a want of an illustration, have failed to notice the much better one in the succeeding number of the *Ephemerides*, even such close investigators as St. Hilaire having failed to discover it. We have, therefore, been all the more particular in our own reference to it, and also for the reason that the statement of König is very unsatisfactory, and his measurements entirely in error. It is impossible to determine whether any peritoneum was involved in the ligation or not, as the surfaces revealed were not exposed to view for nine days, and did not show at this date the minute anatomy of the tissues cut through. It is quite possible that peritoneum may have been gradually closed by adhesive inflammation, and divided before the ligature, unless the separation of the cord in the first step of the operation effectually divided from each other the herniæ which appeared to protrude towards the centre from either side under the force of crying.

*Dr. Böhm of Gunzenhausen's case of United Twins separated by Incision.*¹—The reporter of this case, was both obstetrician and operator, and it has been said also the father of the twins. The mother was a healthy woman, 25 years old, and had previously been delivered of two living girls at single births. The united ones were delivered by the feet without any special difficulty, as they were small, and their mother's pelvis of large size, on December 25th, 1860. The children, who were a little premature, were united sternum to sternum, but otherwise well formed. The description of the connecting band shows it to have been about the size of that in the Swiss twins, and measured five and a half centimetres vertically, or about two inches. It felt soft, except at the top, where the ensiform cartilages united.

Dr. Böhm performed an immediate operation. He separated the umbilical cord up to its entrance, and tied each half by itself; then made a vertical incision into the band and carefully keeping to the median line, cutting into it very cautiously, reached and divided the cartilages, and then the remainder on the rear side. No vessels were tied, and the incised surfaces were drawn together by three button sutures, lint applied, and then a binder. The children were very much prostrated by the operation, but a resort to a warm bath soon restored them, so that they were able to nurse. The sutures were removed on the third day, and the parts healed mainly by the first intention. One of the children was feeble from the first, and died in three and a half days. The other was nearly five years old when the case was published, healthy, but small of her age. The cicatrix forms folds which radiate from a much wrinkled navel. In the median line is a parting of the linea alba, which, when the report was made, measured nine centimetres long, and three and a half wide. The distance from the lower end of the cicatrix to the pubes, was $4\frac{1}{2}$ inches. When the abdominal muscles contract, the contents of the abdomen are protruded between the recti muscles, in the form of an oval eminence. This does not interfere with the proper functions of the abdominal viscera.

¹ Virchow's Archives, 1866, page 152.

The want of the same degree of success that was achieved in the previous case, appears to have been due to the fact that the birth was somewhat premature, the infants small and feeble, and the operation immediately by incision, instead of slowly by ligation, and only a small part by the knife. Had these children been operated upon at a later period, it is probable that the result would have been more favourable. As it was, both nearly succumbed from the shock of the operation, and the one that died eventually, never seemed to have reacted properly after its performance. The only advantage of an immediate operation is, that the umbilical cord can be then more readily separated to its bifurcation; but this step might be attained, and the division established by a partial operation, leaving the more severe portion until an age when it might be more safely performed.

*The Armenian Twins.*¹—"Under the Roman reign (A. D. 945) two male children were brought from Armenia to Constantinople, well formed in all their extremities, who were united by their abdomens. After they had been for some time an object of curiosity, they were removed under order of government, as it was feared that this accident of nature was a presage of evil. They returned at the commencement of the reign of Constantine VII., and one of them dying, the surgeons undertook to preserve the other by separating him from the corpse. All their skill failed; the second died in three days after the operation."

This case having been several times referred to in teratological monographs, we have made a full translation of the original, such as it is. It is probable that they died at an early age.

General Remarks.—Foerster has tabulated 114 examples of omphalopagous twins, upon but one of which was there any operation of separation performed; and from the numbers of this type we have recently met with in our researches, it would be no difficult matter to largely increase this list. In the great majority of cases there is no true *band* of connection, but simply a blending of the thoracic and abdominal walls, bringing the foetuses closely face to face, as in the Hindoo Twins already referred to. In these cases, the viscus which is almost universally duplex, is the liver; and this may be found when the abdominal cavities, and all the remaining viscera are separate. In the Zyphodidymi, of the *narrow-band-type*, we must be prepared to expect that an operation may lay open the peritoneal cavity, and cut through a hepatic connection, most probably containing some true liver tissue. This being the case, ligation by slow degrees is much to be preferred to the knife, as adhesion may be thus effected before the band is finally cut through.

The cases upon record show that those which are born alive are generally small, usually feeble, and sometimes premature, so that they are not in a condition to recommend an immediate operation. Had Eng and Chang been separated soon after birth, they would in all probability have perished, but might have been disconnected by slow ligation, when suf-

¹ L'Histoire du Bas Empire, per La Beau. 1776, Liv. 74, vol. xvi., p. 28.

ficiently grown to have borne the operation. If their social position had been the reverse, and their birth taken place in an enlightened country, they would no doubt have been separated in infancy; but not having an opportunity until old enough to think for themselves, they chose to remain as nature made them; evincing their opposition to the proposal of disconnection, at one time by shedding tears; another by anger; and always by dissent; so that it was never, except in theory, a question for surgical opinion.

Xiphopagous twins are more frequently of the female sex, and are born with much less difficulty than from their nature might be supposed. Being, as already remarked, usually of small size, they are not infrequently delivered without any more than the ordinary manual assistance, after a short labour, and particularly so where the pelvis is large, and the feet present together; but both podalic and céphalic presentations may be regarded as favourable. Injurious interference will often lead to the death of the children when unassisted nature may be able in time to deliver them alive. The management of the labour will depend very much upon the relative dimensions of the twins and pelvis; the position of the former, and the stage at which assistance is obtained. The most common causes of death are pressure upon the large funis; and the means resorted to to deliver in cases of impaction in the pelvis, such as section, evisceration, etc. It is also probable that many do not respire after birth, because of imperfect organization of the nerves and circulatory organs; but judging from the case of the Hindoo Twins, who belonged to one of the most common omphalopagous varieties, it would appear that many might live, if not destroyed in the pelvic canal by manual or instrumental violence. The desirability of such a result is a question entirely separate from its possibility. We feel called upon often to attempt to save or prolong life when, in our judgment, its continuance can hardly be thought desirable. As we cannot know exactly the character of union, or the degree of perfection in the children united, until they shall have been delivered, it is best in all cases to exercise every degree of precaution, and particularly so, as it may prove possible to separate them after birth, as in the Swiss Sisters.

Our recollection of the Siamese Twins is based upon their appearance as presented to us when they were about twenty-five years of age, at which time they were of the colour and appearance of some of the Chinese now in this country. As they grew older they became darker in skin, especially of their faces; and the band had more of a brownish hue. Their heads were not of typical shape as indicative of race, being large, high, and somewhat square, Eng's measuring in circumference $23\frac{3}{4}$ inches, and Chang's $22\frac{1}{2}$ inches. Although exhibited in our chief cities, and long resident in the United States, they never appear to have attracted the scientific interest here that they did in Europe, and scarcely any reference is made to them

in our medical journals from 1829 until after their death ; so that we have been obliged to quote foreign articles almost entirely when considering their anatomical connection, and the question of separation.

We have been repeatedly asked the question, " Could they have been safely disunited ? " and upon this appears to centre with the community, the whole interest in their case—it being long ago established that they were mentally, morally, and physically quite unlike—there still remained to be settled the question as to the possibility of making them independent beings by a surgical operation, so that they should be in all respects separate and distinct. We have also been asked if the autopsy showed the band to have been different from what it was expected should be found.

To the first question we reply that the opinion has been almost universal, that it was quite possible to separate them by slow degrees with safety, but that the operation must necessarily be attended with the usual risks of those practised upon the abdominal parietes involving the peritoneum. This opinion has not been materially altered by the revelations of the post-mortem examination. An immediate operation by the knife, would probably have been of equal gravity with one of ovariectomy ; but that proposed by Le Sauvage promised much more favourably

The second query can only be answered by reference to the combined views of numerous investigators. No one observer formed a correct opinion as to the entire anatomy of the band ; but collectively, Bolton, Simpson, Cook, Vrolik, and Warren, may be said either to have found, or established by analogy, the existence of almost every important feature shown by the autopsy, viz., the lower peritoneal pouches of, first, Chang at the bottom of the band, coming into it from the left ; and, second, Eng just above, and overlapping it from the right ; the hepatic connection ; the ensiform connection and joint ; the interlacing of the diaphragms ; and the independence of the two peritoneal cavities, and of the intestines. This covers all the features revealed, except the infra-xyphoid peritoneal pouch of Chang, and the slight vascular intercommunication of the livers shown by the coloured injection, passed from Chang into Eng.

It must be admitted that the character of the band was sufficiently well established during life to enable a surgeon to decide intelligently as to the risks of an operation of severance. All of the Surgeons consulted in Europe in 1869, held that the twins were not at an age to admit of the performance of the operation with any but the faintest hope of a favourable result. They were then 57 years old ; Chang was quite intemperate, and soon afterwards became hemiplegic ; and both probably had diseased arteries, as they were found atheromatous, and had undergone calcareous degeneration at the time of their death, five years later. But this was not the calculation of risk given when Eng and Chang were young and active.

ART. V.—*A Contribution to the Etiology of Diseases of the Internal Ear.*

By D. B. ST. JOHN ROOSA, M.D., Professor of Diseases of the Eye and Ear in the University of the City of New York, Surgeon to the Manhattan Eye and Ear Hospital. Read before the Society of Neurology and Electrology, April 20, 1874.

THE later investigations in otology have given us all pretty accurate notions as to the general character of those comparatively rare affections, diseases of the internal ear. We are now in no danger, in the great majority of instances, of confounding the insidious affections of the tympanic cavity with those of the labyrinth or of the auditory nerve; the symptoms and pathology having been so clearly marked out that those who run may read, but we are still often puzzled in determining whether a given disease of the internal ear proceeds primarily from the brain, from the tympanic cavity, from some lesion of the auditory nerve, or of its expansion in the vestibule, semicircular canals, and cochlea.

The most conclusive solution of these important problems is to be found in *post-mortem* examinations of those cases which have been carefully observed, as to their aural symptoms, during life, but while waiting for the pathologist, the clinician may contribute his mite toward the desired end. To this end I have carefully collated from the records of my private practice, during the past ten years, those cases of impairment or loss of hearing in which the diagnosis of disease of the internal ear has been made, with the special object of ascertaining what they may teach, and how they may be classified. The published records of *post-mortem* examinations of cases having similar histories, in some few instances have given a warrant for the classification adopted, but, in the main, they will be found to be purely clinical, and lacking, as yet, that positive demonstration which the dead-house alone can furnish. As I have indicated, it is frequently difficult to fix upon the starting-point of a well-defined disease, and more especially in aural affections. An affection of the middle ear, for instance, may soon become one of the nerves, in spite of the fact that the vascular connection is not very intimate; while one of the brain, by one of the numerous channels for extension, readily becomes an affection of the internal or middle ear. Thus diseases overlap each other, and a narrow, special view becomes impossible to the true scientific observer. The etiology of diseases of the internal ear becomes one of immense importance to every man whose duty and vocation it is to study the phenomena of disease. The cases that I have diagnosticated as predominantly affections of the internal ear, amount to 65 out of an aggregate of 1700, constituting about $3\frac{3}{4}$ per cent. of the whole. This proportion is about the same as that obtained by the more recent writers, and by the statistics of institutions where aural diseases are treated. I would also remark that I have carefully excluded

from my statements any cases which were plainly secondary to affections of the middle ear; for example, the suppurative affections of the labyrinth, which evidently began in the tympanic cavity, but which resulted in the impairment of the nervous apparatus, have been classified with the affections of the middle ear. There is a sense in which all cases having, as one of their chief symptoms, tinnitus aurium, are affections of the cochlea; and yet, if the pressure upon the ultimate fibres of the acoustic nerves be caused by the rigidity of the stapes upon the fenestra ovalis, or of thickened mucous membrane, or by inspissated pus upon the fenestra rotunda, we must, I suppose, name the affection, not from its most disturbing symptom, but from its cause. The study of tinnitus aurium, indeed, is much more properly made from affections of the middle ear than from those of the nerve, for, in primary affections of the nerve, the lesion is so profound, or the pressure upon the ultimate fibres is so evenly diffused, or their destruction is so complete, that even the perceptions of irregular vibrations of the auditory rods that we call tinnitus are often abolished, just as there may be eyes in which there are not even flashes of light. Patients with disease of the internal ear do not usually complain of tinnitus; they usually speak of it as a low murmuring noise, to which they pay very little attention; whereas, those who have a tinnitus that is caused by pressure through the fenestræ upon the labyrinth—that is, from the tinnitus of disease of the middle or external ear—are usually very much disturbed by it.

As germane to this subject, I may mention the case of a young woman suffering tinnitus aurium, arising from disease of the middle ear, which was especially annoying to her highly cultivated musical taste, because the tinnitus kept upon certain notes for a long period, and then turned to another. This lady kept a record of the monotonous concert which she was obliged to hear, of which I present a few specimens:—

Feb. 13, Morn.	C sharp,	B flat,	F sharp,	in right	B in left.
“ Night	E flat,	C flat,	A	“	“
Feb. 14, Morn.	“	“	“	“	“
“ Night	C sharp,	B flat,	F sharp,	“	“
Feb. 15, Morn.	“	“	“	“	“
“ Night	“	“	“	“	“
Feb. 16, Morn.	“	“	“	“	“
“ Night	F sharp,	E flat,	B	“	“
Feb. 17, Morn.	D	B	G	“	“
“ Night	“	“	“	“	“
Feb. 18, Morn.	E	C sharp,	A	“	“
“ Night	D	B	G	“	“
Feb. 19, Morn.	F sharp,	E flat,	B	“	“
“ Night	D	B	G	“	“
Feb. 20, Morn.	C sharp,	B flat,	F sharp	“	“
“ Night	“	“	“	“	“

The diagnosis of diseases of the internal ear is not as purely objective as could be wished. In many cases we are obliged to depend on negative symptoms, which are apt to be deceptive. Since the introduction of the tuning-fork into practice, however, we have been greatly assisted; and if we could induce our patients to give up the preconceived notion, that, be-

cause they hear a watch tick better with one ear, they must also of necessity hear a tuning-fork placed on the forehead, or teeth, better, on the same side, we should make a much greater advance. As it is, however, diseases of the internal ear get the benefit of the doubt, and only those are classified among them, that cannot be at all fairly placed among those of the middle ear, so that future investigations will probably rather increase than lessen the proportion of nerve disease, unless we shall find that cerebro-spinal meningitis does not so often destroy the auditory nerve, as has been supposed by many, and unless we cease to consider every congenital or intra-uterine affection of the ear as one of the nerve.

A very natural, but rather vague classification of diseases of the internal ear may be made by dividing them into the traumatic and idiopathic varieties.

Traumatic Causes.—The history of the traumatic cases is usually so plain, and the results of examination are so positive, that we have no room for doubt as to their etiology. Five of my cases were clearly of a traumatic nature; and eleven others should have been so classified, I think, although they were cases in which the lesion of the nerve was not caused by a direct blow or fall upon the bony covering of the ear, but by a constant life amid the rapidly and constantly occurring vibrations incident to boiler-making, or the incessant click of telegraph instruments. The histories of these cases will furnish the data which led to the diagnosis.

CASE I. Severe fall; complete deafness on one side; normal drum membranes.—Sept. 14, 1865. E. M., æt. 11, five years ago, or when six years old, had a severe fall down stairs, striking his head, and he has been totally deaf on the right side ever since. The drumheads of both sides are normal. He cannot hear the ticking of the watch on the right side, except when upon the mastoid region, the meatus being closed. The air is easily forced through both tubes by Politzer's method and by the experiment of Valsalva, but no improvement to the hearing results.

CASE II. Profound deafness from blows on the head.—St. Vincent's Hospital, Jan. 6, 1868. This man, æt. 45, was severely beaten in a fight some few months since; he was unconscious for four days, and, when restored to consciousness, was perfectly deaf, in which condition he still remains. His gait is irregular; finds great difficulty in keeping his head in an erect position, even when supporting it with his hand. Marks of blows are still traceable over one eye and the right mastoid process. There seems to be an entire absence of hearing power, as found by all the tests capable of application. He seems very much dejected, but is well nourished. Both membranæ tympani, especially the left, appear sunken, and have lost their transparency. Air enters both ears by Politzer's method; the pharynx is in fair condition.

I think we may fairly conclude, in this case, that the blows produced an inflammatory action in the nerve, as well as in the meninges of the brain and the parts of the middle ear, and this is probably the ultimate lesion in the case of blows and falls. The bloodvessels are perhaps at first ruptured; and we know, from post-mortems in similar cases, that suppurative

inflammation of the labyrinth and basilar meningitis have resulted. In ophthalmic practice we observe cases in which atrophy of the optic nerve follows severe injuries upon the side of the head; but this atrophy presents no ophthalmoscopic appearances at first—or at least very few, and may affect but one nerve. The fact that each ear, unlike the eye, is an independent organ, often saves the victim of severe injuries on one side from total deafness.

In the following case, it may perhaps be questioned whether the lesion was not chiefly in the middle ear, since there was some considerable hearing power remaining; but the fact of the existence of hearing power by no means excludes the labyrinth as the seat of the disease. It has been shown that the semicircular canals may be destroyed by suppuration; and yet, so long as the cochlea remains, there will be some hearing power.

CASE III. Severe injury; increase of previously existing impairment of hearing.—A gentleman, æt. 33, was a passenger in one of the cars that were thrown off the track, and precipitated upwards of 100 feet down an embankment in the famous Angola accident. He received a severe injury in the occipital region especially. He had some difficulty in hearing in the right ear before the accident, but immediately afterwards, the deafness was materially increased. Ten days subsequently, he suffered considerable pain in the right ear, beside certain head symptoms. There is tinnitus aurium in the left ear, but none in the right. The right drumhead is very much sunken and has no light spot. There is some pharyngitis. Hearing distance: right watch $\frac{0}{48}$, left $\frac{1}{48}$.

CASE IV. Blow over mastoid process; pain, vomiting, very great loss of hearing.—Joseph A., æt. 13, five weeks ago was struck over the mastoid process by a croquet mallet; which stunned him very much, and he vomited frequently for the first few days. One week after the accident he had pains in the ear that lasted for half a day, but there was no bleeding. He hears the watch ticking, when pressed upon the right ear. The hearing distance is normal from the left side. The tuning-fork is not heard at all on the right side, unless the meatus is closed by the hand.

I have seen two cases of nerve disease in telegraph operators: one of tinnitus aurium without impairment of hearing; and the other showing great impairment in the ear that was turned towards the apparatus when in the act of listening. I was disposed to treat the first case as merely coincidental; but when the second occurred, and others had been brought under my notice, I was compelled to admit them into the same category as those familiarly known as boiler-maker's deafness.

There can be, I think, no hesitancy in believing that the continual recurrence of one kind of sound, having no musical, but, on the contrary, an unpleasant character must at last cause a congestion of the ultimate nerve fibre in the cochlea. The incessant shock or concussion made upon the drumhead by the blows from dozens or even hundreds of hammers upon vibrating plates, must agitate these fibres in such a manner as to put them out of tune, as certainly as the constant use of the piano will at last loosen its strings. Clinical experience confirms this; and my own observations

and investigations in reference to boiler-makers' shops, seem to demonstrate the following facts:—

I. Boiler-makers are nearly all hard of hearing; and those who are not have, as a rule, taken the wise precaution of plugging the external meatus with cotton, so as to diminish the force of the sound-wave upon the drum-head.

II. The impairment of hearing is generally attributable to some lesion of the labyrinth, probably of the cochlea; for the chief symptoms are loss of hearing, and tinnitus aurium; there is no vertigo, or staggering in the gait.

Superadded to this serious trouble, tympanic or middle ear catarrh is very frequently present, but these must be regarded as purely coincidental. Boiler-makers are constantly exposed to sudden and marked changes of temperature, and hence often catch cold, intensifying and increasing, by this means, the ear affection.

Should a man, already suffering from disease of the middle ear, begin to work in a boiler-shop, he will, of course, suffer in a much greater degree and the organ be more susceptible of additional injury than a man who is in the enjoyment of a sound organ of hearing. Dr. D. R. Ambrose has shown me a case which confirms this view. In the same way, a telegraph operator who has pharyngeal catarrh, and consequently a swelled Eustachian tube, which is not always capable of performing its proper function, will be more sensitive to, and suffer more acutely from, the concussions of the instrument than he who has a healthy throat. The existence of tympanic and tubal catarrh will cause the Eustachian passage to be less pervious, or even at times entirely closed; and thus aggravate the unpleasant conditions existing when waves of sound that have to go but a short distance, and are besides inclosed in tubes, and thus increased in intensity, impinge upon the molecules that make up the ultimate fibres of the auditory nerve.

Those who work inside the boilers as riveters, and who thus have shorter waves of sound striking upon their ears, lose their hearing power most completely, as is evidenced by the testimony of all old boiler-makers. It is not easy, in the absence of post-mortem investigations, to define the exact nature of the lesion, but it may probably be a passive congestion of the contents of the cochlea. If care were taken to deaden the sound—that is, to interrupt the vibrations by the use of the cotton plug—I have no doubt but that the hearing power of boiler-makers might be materially preserved. One of the cases already alluded to, which will be given below, is a striking exemplification of what may be accomplished in this respect.¹

CASE V. *Tinnitus aurium, without impairment of hearing; occurring from listening to a telegraph instrument.*—W. G. B., æt. 37, states that

¹ I am indebted to Hon. Robert P. Parrot, of Cold Spring, and Dr. F. D. Lente for the opportunity of seeing these cases.

he has been a telegraph operator for about twenty years, and that he has had tinnitus aurium for about two years. Hearing distance: right $\frac{4}{8}$, left $\frac{4}{8}$. Both membranæ tympani have good light spots; there is some granular pharyngitis. The patient is confident that the vibrations of the telegraphic instrument have caused the noise in his ears. The sound of the instrument is very unpleasant to him, and he is obliged to protect his ears while at work by cotton plugs. Indeed, his ears have got into such a sensitive condition that jarring sounds of any kind are extremely annoying to him. The patient is in good general health.

CASE VI. *Impairment of hearing of one side, ascribed to occupation as telegraph operator.*—May 4, 1870. Mr. B., æt. 27, about a year ago, discovered that the hearing power of his left ear was somewhat impaired. Three months ago he was troubled with a continuous noise in that part of his head. He is a telegraph operator, and has been accustomed to use his left ear—leaning his head over the machine on that side and intently listening. He believes that this is the cause of his loss of hearing. The drumheads look very much alike, both exhibiting peripheral opacities, but in other respects having a normal appearance. The pharynx and nares seem to be healthy. Inflation of the ears has no effect upon the hearing. The watch is not heard at all on the affected side, nor is the tuning-fork.

CASE I. *Boiler-makers' deafness; impairment of hearing; absence of tinnitus aurium.*—W. B., æt. 64, has been a boiler-maker for 33 years, and heard perfectly well before he began to work at that business. He has never had "earache;" his hearing began to fail him four or five years after his entering the shop. Hearing distance: right $\frac{0}{8}$, left $\frac{0}{8}$. Tuning-fork not heard when the handle is placed upon the forehead, but distinctly audible when placed on the teeth. Membranæ tympani: right, manubrium distinct, light spot of good shape; left, the same appearances. He has no tinnitus aurium; he hears conversation better in the noise of a shop than outside, but he cannot hear the watch any further. Politzer's method does not improve the case or the hearing power; nor is the air felt to enter the ear.

The interesting question of why it is that some persons afflicted with impairment of the hearing hear better in the midst of noise, occurs naturally in discussing this subject. The fact is that, while these patients hear conversations better in the midst of noise, they cannot hear the tick of a watch at any greater distance. I have simply to say, that all the explanations as yet given seem to me totally inadequate to explain the phenomenon. So far from the drumhead being relaxed in these cases, it is very often extremely rigid.

CASE II. *Boiler-maker eight years; gradual loss of hearing.*—Robert B., son of preceding, æt. 23, has been in boiler-shop eight years, had heard well before he entered the shop, but he finds that he is gradually losing his hearing power. Hearing distance: right $\frac{1}{8}$, left $\frac{1}{8}$. Tuning-fork is plainly heard in both ears; membranæ tympani normal in both sides. The employment of Politzer's method slightly improves the hearing.

CASE III. *Boiler-maker thirteen years; tympanic as well as labyrinth disease.*—W. B., æt. 30, has been thirteen years in the shop, and finds that his hearing is becoming impaired; had earache occasionally, and a discharge from one of the ears for a short time. Some years ago suppura-

tion occurred which soon ceased. Hearing distance: right $\frac{48}{48}$, left $\frac{3}{48}$. Tuning-fork heard better in right ear. There is no tinnitus. The right ear drum is concealed from view by hard wax; the left is normal in appearance.

It is possible that the impairment in hearing in this case was due to a catarrhal process that occurred years before, but there were no evidences of this in the left drumhead. On the other hand, the wax may have acted to protect the right ear. The use of Politzer's method did not improve the hearing.

CASE IV. *Boiler-maker; great impairment of hearing.*—Mc—, æt. 64, is confident he heard well before entering the shop. Never had earache nor a discharge from the ear. Hearing distance: right $\frac{0}{48}$, left $\frac{0}{48}$. The tuning-fork is heard well when placed upon the teeth, but not when on the forehead. The membranæ tympani are not quite as transparent as normal, but there are good light spots in each of them. There is no tinnitus aurium. Politzer's method has no effect upon the hearing power.

CASE V. *Boiler-maker; great impairment of hearing.*—S., æt. 66, heard well before entering the shop. Never had earache or a discharge from the ear. Hearing distance: right $\frac{0}{48}$, left $\frac{0}{48}$. Right membrana tympani covered by hardened cerumen; left a little sunken. Tuning-fork heard better in the ear containing the wax.

CASE VI. *Boiler-maker; considerable impairment of hearing; some middle ear catarrh.*—G., æt. 29, his hearing is becoming impaired; heard well before going into the shop. He had no earache nor discharge from the ear. Hearing distance: right $\frac{2}{48}$, left $\frac{0}{48}$. Tuning-fork heard equally well on both sides when placed upon the forehead, but heard better in the right ear when placed on the teeth. Complains of a buzzing noise in his ears. The use of Politzer's method increases the hearing distance to $\frac{3}{48}$ on the right side.

CASE VII. *Boiler-maker seventeen years; good hearing; protection of ears.*—Z., æt. 29, he states that he hears well; has always worn cotton in his ears when in the shop, because he "could not stand the noise;" has been very particular about this, and ascribes the good hearing power that he enjoys to this care. Both membranæ tympani are normal in appearance. Hearing distance: right $\frac{30}{48}$, left $\frac{30}{48}$, and is still further improved by the use of Politzer's method.

CASE VIII. *Boiler-maker eight years; supposed good hearing power; actual loss.*—X., æt. 22, thinks he hears well; hearing distance: right, watch when laid upon the ear; left, the same. Has some tinnitus aurium. The tuning-fork is heard distinctly. Right membrana tympani has a small light spot; left has none at all. Inflation by Politzer's method improves the hearing somewhat.

Inasmuch as the boiler-makers were not examined in private practice, I do not include them in the 1700 cases from which the other cases are taken, and they are numbered by themselves.

CASE VII. *Exposure to cannonading; tinnitus; impairment of some of the ultimate fibres.*—Feb. 11, 1868. W. R. X., æt. 25, observed some difficulty in hearing ten years ago; and, after being exposed on a gun-boat to some cannonading, while an officer in the navy, he became worse, although he has scarcely any tinnitus aurium. Hearing distance: right ear $\frac{1}{48}$, left

ear $\frac{1}{18}$. Both drumheads appear to be normal. Air enters each Eustachian tube freely, but causes no improvement in the hearing power.

I have had ample opportunity to test the hearing power of this patient in conversation, which he hears so well, in spite of the fact that his power of hearing the watch is much impaired, that he has never been considered by any, but his most intimate friends, as very hard of hearing. Persons who can hear the watch no better than he, are usually, if not almost always, very much troubled to hear conversation even when addressed especially to them; and yet the patient in question could join in general conversation carried on in an ordinary tone, and can hear lectures, etc., with perfect ease.

Hemorrhagic and Inflammatory Causes.—The exact nature of the idiopathic cases of diseases of the internal ear is perhaps not so clear as that of the traumatic variety, but judging from the cases that I have seen, we may fairly adopt the classification that ranges them under the following heads: Hemorrhagic and Inflammatory.

The hemorrhagic or apoplectiform are those that occur very suddenly, and so far as we at present know, hemorrhage may occur into the cochlea and semicircular canals in persons who have previously had good health, and in whose bloodvessels there are no other evidences of breaking down. *A priori*, we should conclude that patients suffering from Bright's disease might have hemorrhage into the labyrinth, but as a clinical fact, in the few cases that have been observed of hemorrhage into the ear in cases of Bright's disease, the bleeding occurred in the middle and not in the internal ear. Menière's somewhat famous cases—which all began suddenly—or, at least, the prominent symptoms of deafness, vertigo, nausea appeared suddenly—were probably hemorrhagic. One of them we know did, for the post-mortem examination revealed a healthy cerebrum, cerebellum, and spinal cord, but bloody exudation in the semicircular canals. It is only the suddenness and consonance in the occurrence of those symptoms that make a pure case of primary disease of the internal ear, for all of them may occur where a patient has had disease of the middle ear for several years, which has at length passed into the labyrinth.

Mr. Hinton relates a case¹ which has an amusing aspect, since sudden and profound deafness occurred in a young fellow in perfect health, and in the possession of all his faculties, who was about to call upon the parents of the young lady who afterwards became his wife, for the purpose of asking her hand in marriage. This gentleman recovered to some extent, probably from the good effects of a favourable reply.

Ten of the cases out of the entire number forming the basis of the remarks contained in this paper, were apparently of this hemorrhagic or exudative character, though it may be that it is not always blood that is suddenly effused.

¹ Nervous Deafness, reprinted from Guy's Hospital Reports.

CASE VIII. *Sudden and complete loss of hearing power, supervening on old aural trouble.*—July 21, 1865. Mrs. S. D. M., æt. 28, states that she has not heard well from the right ear for some years. Eighteen months since, the hearing power of the left ear was suddenly lost, when the patient was in feeble general health. There is no history or appearance of syphilis or other constitutional disease. She has had two children; the last one was born two years since. The patient is a pale, slight woman, but her appetite is good and the general nutrition seems to be fair. The hearing power appears to have entirely left her. She cannot hear the ticking of the watch, no matter where it may be placed—and cannot distinguish the sounds of the human voice, even through a speaking tube.

The right membrana tympani is opaque; it has no light spot, and is immovable; the left one not quite so opaque. The patient's voice is natural in tone and modulation.

The air enters both Eustachian tubes by the use of Politzer's method. In September, after the inflation of the ear, the use of iodide of potassium, and a still further improvement in the general health, the patient could hear the sound of a voice through the tube; but she did not get beyond this point so long as she remained under my observation, which was some six months.

CASE IX. *Sudden loss of hearing on one side.*—Sept. 5, 1866. J. F. T., æt. 50, a very active business man, about a year and a half ago, suddenly observed a noise in his left ear, and found, on examination, by means of the ticking of a watch and by conversation, that he was deaf on that side. The deafness still continues, and at times he is subject to attacks of dizziness. The watch is not heard at all on the affected side. The drumhead is somewhat opaque, especially in one spot, and it is rigid, scarcely movable. There is some chronic pharyngitis. The hearing power of the other ear is normal.

The patient was treated by the use of the vapor of muriate of ammonia through the Eustachian tube—through the catheter, and astringent applications to the pharynx. The hearing power increased to $\frac{1}{48}$, and the attacks of vertigo disappeared. I have frequently seen this patient since he passed from under my professional supervision. His hearing power consists in an ability to hear the watch when placed upon the auricle. The attacks of vertigo are very infrequent, and the patient is still (though suffering from this affection for nine years) engaged in active business life.

CASE X. *Sudden tinnitus, nausea, vertigo, deafness.*—Jan. 2, 1866, Mr. M., æt. about 55, was brought to me by his son, a physician of this city. About a year since, a noise suddenly occurred in the patient's right ear, and it has persisted since that time. At times he has been very much troubled by vertigo and nausea. Hearing distance: right ear, $\frac{1}{150}$; left ear, $\frac{3}{20}$. Both drumheads have opacities, but they present good light spots, and are movable. There is some pharyngeal catarrh; the general health is good, but the patient lives a sedentary life, being a bank officer.

At the time I first saw this patient, I was not in the habit of using the tuning-fork in diagnosis; but, seven years later, I again had the opportunity of examining his ear. It probably primarily involved the vestibule and semicircular canals; for the vertigo and nausea were prominent symptoms, even when there was considerable hearing power. We can scarcely, I think, conceive of extended affection of the cochlea, without complete loss of hearing. When last I saw Mr. M., the hearing power was so much diminished, that he could only hear the watch when pressed upon the ear.

Fits of dizziness and nausea still continue to recur. The membranæ tympani still look tolerably well. They have well-defined light spots; but, on practising Politzer's method, it is only by the use of the vapour of chloroform that any sensation is experienced in the tympanic cavity.

I have often observed that it is very difficult to cause any sensation from the use of Politzer's method on persons who have been deaf for some time from a nerve affection, but the reason for this I have never been able to understand.

CASE XI. *Vertigo; vomiting at intervals for nineteen years; sudden deafness on one side.*—Jan. 13, 1868. Mrs. F., æt. 39, for eighteen or nineteen years has had, at irregular intervals, attacks of vertigo and vomiting. For a long time they ceased; but about a year ago they recurred with increased severity. Three or four years since, she found that she could not hear well on the left side, and that she had a singing noise in the ear. The watch is heard $\frac{2}{3}$ on the right side, not at all on the left. The pharynx is normal in appearance, as is the right drumhead. The left is very much sunken, but normal in colour. The air does not enter the tympanic cavity well. The patient remained under observation for some eight months, and was relieved of the vertigo after taking iodide of potassium.

CASE XII. *Sudden deafness ascribed to checked perspiration.*—Mrs. O. B., cook by occupation, has been deaf in the left ear for six or seven years. The loss of hearing, or rather the great singing in the ear that preceded it, was rather sudden in its origin, and is ascribed by her to getting cold while lying down when overheated and scantily clothed. The hearing distance of the right ear is $\frac{2}{3}$; left ear, $\frac{0}{8}$. The right membrana tympani is normal in appearance. The left is sunken and has two light spots. The tuning-fork is only heard in the right ear.

CASE XIII. *Sudden tinnitus aurium; deafness; excessive use of tobacco.*—Mr. R., æt. 57, upholsterer. Eighteen months ago the patient was suddenly seized with tinnitus aurium of the right side. This noise has continued ever since. His general health is good, except that he has periodical headache; he smokes a dozen pipes a day; he has never had pain in the ear. Hearing distance, watch laid on the right ear; left ear, $\frac{7}{8}$. The drumheads seem to be normal in appearance; the tuning-fork is heard more distinctly in the better ear. Inflation of the ears improves the hearing on the left side, but it makes no change on the right.

CASE XIV. *Suddenly occurring deafness in one ear; three years later sudden deafness of the other.*—Aug. 31, 1869. Mrs. A., æt. 47, healthy-looking, states that three years ago, on the 2d of August, she retired with her hearing apparently in its usual healthy condition, but awoke deaf in one ear, with a roaring sound in it. Five weeks ago, while riding in the railway cars, a noise occurred in the other ear, and she is now deaf to all ordinary sounds; the noise, however, has disappeared; the vibrations of the tuning-fork are not perceived. The general health of the patient is good, and no cause for the deafness was found in the history, or in any examination that was made. The bowels have been constipated for years. There is no dizziness.

CASE XV. *Sudden deafness with tinnitus aurium.*—Nov. 3, 1873. Dr. R. M. D., æt. 60, nearly three years ago, while attending a midwifery case, perceived suddenly a whistling sound in his left ear, which has continued ever since, and there is some impairment of hearing on that side.

Hearing distance: right normal; left $\frac{2}{4}$. The tuning-fork is heard better in the right ear. The drumheads show no traces of disease, and the tympanic cavities are readily inflated. The ear has been treated for middle ear trouble without alleviation.

CASE XVI. *Cerebral hemorrhage; deafness*.—Mr. B., æt. 62, a rather feeble man, with intellect seemingly unimpaired, had an attack that appears to have been one of cerebral hemorrhage, and is partially paralyzed on the right side. Since then he has been hard of hearing in the left ear; and, although he has very much improved as to his paralysis, he is very often dizzy, and walks with some unsteadiness. His hearing power is nearly obliterated on the left side; on the right it is $\frac{1}{4}$. He hears the tuning-fork only on the right side. There are no marked appearances on the drumheads, and the tympanic cavities are easily inflated, without benefit to the hearing.

CASE XVII. *Sudden deafness of one side; gradual loss of hearing on the other*.—J. T. A., æt. 47, fifteen or eighteen years ago lost the hearing of one ear almost instantly, without known cause. He is now gradually losing the hearing power in the left ear. Hearing distance: right ear 0; left $\frac{2}{4}$. Conversation is heard better than the watch would indicate.

CASE XVIII. *Sudden loss of hearing of one side, ascribed to excessive mental employment*.—April, 1873. Dr. J., æt. 33, eleven years ago, just before graduating in medicine, was lying upon a lounge studying, and on getting up found a ringing in the left ear, accompanied by dizziness, so that he staggered about the room for some time. He soon recovered from the vertigo, but experienced some impairment of hearing in the left ear, and this has continued, with rather more intensity than at first. Hearing distance: right ear $\frac{2}{0}$; left $\frac{1}{5}$. Tuning-fork is only heard on the right side. The ear is very sensitive to cold. A moderate amount of cold causes cold; overwork also increases the tinnitus. The patient is now a hard-working physician, and is at times compelled to give up work for a time on account of the troublesome symptoms referred to his ear.

Inflammatory affections.—In discussing the subject of the inflammatory origin of nerve deafness, we enter not only upon a wide field, but upon a theme that has caused much difference of opinion. Yet there is a common ground from which we may start. Inflammation of the labyrinth may extend from the base of the brain in the course of the various affections that exist there. Thus, in basilar meningitis, there may be an effusion about the auditory as well as the facial nerve, and the patient become deaf as well as suffering from loss of motion. Syphilis may produce a perioritis of the internal auditory canal; or a gummy tumour may occur in the semicircular canals. The morbid process known as cerebro-spinal meningitis, after it attacks the membranes of the brain, may extend to the internal as well as to the middle ear.

But there are several questions which naturally suggest themselves to us. For instance:—

May we have a spontaneous, independent inflammation of the nerve expansion in the cochlea and semicircular canals, which only affects the cerebrum in a reflex manner, just as convulsions may be caused by the pressure of pus or mucus in the tympanic cavity?

Does quinia, when taken internally, sometimes produce an inflammation of the auditory expansion?

These latter are questions still *sub judice*. I must, however, confess my earnest conviction that there is such a thing as primary affection of the labyrinth, especially in young children; and that it is sometimes mistaken for cerebro-spinal or basilar meningitis.

As to the effects of quinia I am only positive on one point; and that is, that large doses of quinia will aggravate a previously-existing aural inflammation, and place it beyond the possibility of cure. The tinnitus aurium resulting from the large doses of the remedy must be due to a congestion of the ultimate fibres of the nerve. That congestion usually disappears entirely, but perhaps not always—certainly not in every case when there is a pre-existing congestion of the auditory apparatus. Quinia, therefore, becomes a doubtful remedy in cases of acute basilar or cerebro-spinal meningitis, or in cases of acute affections of the tympanic cavity.

Dr. C. S. Duffy, Jr., of Newbern, N. C., has collected for me the few following cases of impairment of hearing, supposed to have been aggravated or caused by quinia; but both Dr. Duffy and myself admit that the evidence that the use of the medical agent is of itself sufficient to produce disease of the internal or middle ear is not perfectly conclusive.

"It is almost certain," Dr. D. writes me, "that two of the following cases, though they claim to have been rendered deaf by quinia (Cases 1 and 3), owe their trouble to other causes. No. 2 looks like a veritable case of quinia difficulty, and yet I believe, could I have used the catheter a few times, the hearing could have been greatly improved. I have treated this lady recently in a malarial attack, and given her quinia (20 grains daily) for several days, administering at the same time morphia and bromide of potash, without much inconvenience to her.

"In future I will keep a sharp look-out for these cases, and if I find anything worth sending you will make a note of it.

"CASE 1. April 3d, Mrs. Z. C., aged 46, pale and sallow, thin and emaciated; when a child was much troubled with earache which was usually succeeded by discharge from auditory canal. Had slight dulness of hearing ever since, up to the age of thirteen, when, after having taken moderate doses of quinia for some months with but slight inconvenience, took a very large dose (do not know how much) and became suddenly deaf. Had tinnitus constantly, and very annoying—the noise "sometimes resembling that of a wagon running over a rocky road," but always aggravated by quinia. Cannot hear the watch pressed on either side. Hears ordinary conversational pitch through trumpet but requires to be spoken to very loudly to be made to understand without it. Hears tuning-fork on either side strike. Drumhead pinkish, transparent, but much shrunken; handle of malleus and short process distinctly seen. Could not inflate drum, or improve the hearing by the attempt. Throat relaxed and flabby, with distended vessels. No enlargement of the tonsils.

"CASE 2. April 6, 1874, Miss A. V. D. Very healthy; hearing perfect, until attacked with chills twenty years ago; the second paroxysm occurred, notwithstanding quinia had been freely administered, and was of such severity as to seriously threaten life. Large doses of quinia frequently repeated (quantity not known) during the succeeding twenty-four hours were given, and continued in gradually diminishing doses for ten days, at which time convalescence was established. Hearing almost wholly extinct; tinnitus, with loud, explosive sounds, was troublesome. After three or four years hearing had improved, when another attack again necessitating the administration of the previously

described remedies, she was again reduced to a similar condition, which has continued to the present time. Hearing distance; right, $\frac{1}{4}$ inch; left pressed. Tuning fork best "in left." Drumheads shrunken, malleus distinct on either side. After Politzerizing, hearing distance increased on right to $1\frac{1}{2}$ inches, left to $\frac{1}{2}$ inch. The patient not cognizant of air having entered cavity; would not tolerate catheter; throat injected; uvula relaxed; tonsils enlarged and nodulated; hoarseness, with disposition frequently to clear the throat.

"CASE 3. April 11, 1874, G. B., aged 13. Had measles when four years old, which left some difficulty of hearing on the left side. When six years old had typhoid fever (so his mother says) which lasted ten days (?). Had severe pain in his head, and was delirious; took "a great deal of quinia," which "made his head so bad it had to be discontinued." When he had recovered from fever it was found he could hardly hear the loudest noise—not even thunder. No tinnitus. Cannot make him hear anything at all. Can feel the tuning-fork but not hear it. Drumheads whitish, and so much depressed as to seem to be drawn tightly over the bones; short process projects much like a thorn; no air can be made to enter cavity with Politzer or catheter. Throat scarred. Tonsils hard and nodular."

Parotitis.—Two of my cases of disease of the internal ear were probably caused by parotitis, and their histories are here given.

CASE XIX. *Parotitis; deafness of one side.*—H. A. H., æt. 23; three years since the patient had the mumps, not severely, but in it he lost the hearing of the right ear. Hearing distance: right $\frac{9}{16}$; left $\frac{4}{8}$. The membrana tympani is entirely normal in appearance. The watch is heard when pressed upon the mastoid process. There is considerable tinnitus aurium. The patient was treated for about two months by applications through the Eustachian tube. After the first application the watch was heard when pressed upon the auricle, but the hearing power never got beyond that. The tinnitus aurium was diminished for an hour or so after the application of vapour to the middle ear.

CASE XX. *Parotitis; deafness of one side.*—Miss B., æt. 21: A year since, had the mumps, and on recovery she discovered that there was a buzzing sound, like that of insects in the left ear; from that period until the present time the hearing-power has been very defective from that ear. Hearing distance, right ear 0; left ear, normal. The tuning-fork is heard only on the right side of the head. The membranæ tympani are normal in appearance. There is granular pharyngitis.

Parotitis is decidedly a catarrhal disease, and probably of the ducts of the parotid. It is not at all unlikely that oral catarrh is present in all the cases; and the catarrh of the pharynx may lead to that of the tube and the tympanic cavity. In severe cases of parotitis, although this is very rarely true of the idiopathic parotitis, but more frequently in the form arising in the course of other diseases, periostitis of the malar, maxillary, temporal, and sphenoidal bones, may occur; and thus the tympanic cavity and labyrinth be affected. The etiology of primary or secondary affections of the labyrinth, occurring during the course of parotitis, seems to me to be quite clear. There is simply an extension of a catarrh of the mouth to the Eustachian tube and tympanic cavities, and to the vestibule, semicircular canals or cochlea, or there may be an extension of a periostitis, or suppurative process.

Extension of cerebro-meningeal disease.—Seven of the cases here re-

ported resulted undoubtedly from an extension of the inflammatory process in the case of the brain to the internal or middle ear. I say internal *or* middle, for reasons that will soon be given, which do not make me certain that the lesion was in the internal ear.

All the writers upon general medicine that I have been able to consult and my own experience agree that as a consequence of cerebro-spinal meningitis different parts of the eyeball may become affected; so that we may have purulent conjunctivitis, keratitis, choroiditis, serous or purulent, as well as optic neuritis, as effects of this disease. Eyes may be readily examined, hence there is no dispute as to the kind of ocular lesion that may occur as a result of cerebro-spinal meningitis. The ear may also be affected in all its parts in the course of cerebro-spinal meningitis. I have seen otitis media catarrhalis and suppurativa occurring as a result of this disease. It is not correct, in my opinion, to state that we can make a diagnosis as to the seat of aural trouble by the amount of the impairment of the hearing. I have seen persons so hard of hearing, from disease which certainly was chiefly situated in the middle ear, that no conversation could be had, even if words were spoken into the auditory canals; and, on the other hand, there may be considerable primary impairment of the functions of the terminal auditory apparatus, and yet the deafness not be absolute. As well might we say that a diagnosis between an affection of the media and the light-perceiving surfaces of the eye can be made by an estimation of the degree of vision, as to conclude that, because the impairment of hearing is nearly absolute, the seat of the primary and chief lesion is the auditory nerve. A thoroughly sunken drumhead, a rigid chain of ossicula, and a tympanic cavity well plugged with neoplastic material, will make any but the faintest perception of sound impossible. It will be observed that in nearly all the cases of deafness that I have seen in adults, there was still some perception of sound; and it is extremely rare to find patients, even in deaf and dumb asylums, in whom quantitative perception of sound is obliterated.

Three post-mortems which have been often quoted have demonstrated suppuration of the labyrinth as the lesion in disease of the ear attendant on cerebro-spinal meningitis; but the assertion which is creeping into our literature as a fact,¹ that suppuration of the labyrinth is *the* lesion of the ear, has no better foundation than these meagre facts, and an argument by analogy from the state of things that occurs in the eye. Moos has very lately reported the post-mortem of a case which confirms the view that I advanced, at a meeting of the New York Ophthalmological Society, some three years since, viz., that non-suppurative middle ear disease might be the cause of the deafness arising from cerebro-spinal meningitis. In Moos's

¹ Dr. J. Lewis Smith, American Journal of the Medical Sciences, October, 1873, p. 332.

case, not a trace of nerve-disease was found except hyperæmia of the sheath of both auditory nerves, but the inflammation made its way along the dura mater into both tympanic cavities. The mucous membrane of the middle ear was "very vascular, hyperæmic, and thickened." There was some serous fluid at the bottom of the tympanic cavity. Moos also quotes a case from Klebs, that of an officer who died from cerebro-spinal meningitis, where the auditory nerves showed nothing abnormal, and the terminal apparatus of the nerve showed no lesion to explain the deafness. But, in the tympanic cavity were found the remains of a very extensive inflammatory process in the form of numerous, dark, vascular bands of connective tissue which radiated from the vesicle to all parts of the tympanic cavity.¹ I am, therefore, in doubt whether some of the cases which, in accordance with the prevailing nomenclature, I have classified under the head of nervous deafness from cerebro-spinal meningitis, do not rather belong to that of middle ear disease, especially as my clinical observations constantly show me cases of loss of hearing after or in the course of this disease, that give all the appearances, in a sunken and rigid drumhead, sufficient to account for the loss of hearing. The hypothesis that the lesion of the ear is a suppuration is certainly as yet confirmed by no evidence that renders it anything more than an hypothesis. There are more post-mortems on record where the lesion is not in the internal ear at all, than there are of suppuration of the labyrinth; and, in the post-mortem investigations of the internal ear made by Toynbee, Hinton, Moos, and von Trötsch, this lesion has as yet been observed but twice.

CASE XXI. *Cerebro-spinal meningitis; bi-lateral deafness; both drumheads sunken.*—Dec. 30, 1869, R. M. W., æt. 13, five years ago this winter, had an inflammatory disease of the head and joints, and, when he recovered from this affection, became deaf. He does not hear words in any way. He feels the tuning-fork in each ear. The membranæ tympani of both sides are sunken; the pharynx and nares are in a healthy condition; air enters both tympanic cavities.

CASE XXII. *Cerebro-spinal meningitis; deafness of both sides.*—A. B., æt. 5, when fifteen months old, imitated speech and other sounds; and, at about this period of its life, it went to bed apparently well one evening, but awoke in the morning with a severe attack of vomiting, and for 24 hours had convulsive movements. There were purple spots on the legs and arms. Recovery occurred in two or three months. The patient seemed to be conscious of sounds during its illness, sounds disturbed him. He was soon discovered to be deaf.

CASE XXIII. *Cerebro-spinal meningitis; absolute deafness; both drumheads sunken.*—C. M., boy, æt. 4 years 8 months, heard and talked well until about a year ago, until he had a fit of sickness, which the parents described very imperfectly, but which was attended by some loss of power in the limbs. There was at one time some discharge of pus from one of the ears. The child does not seem to hear sounds at all; the vibrations of a large tuning-fork are not perceived. Both drumheads sunken and pinkish.

¹ Knapp and Moos's Archives of Ophthalmology and Otology, vol. iii. No. 2.

CASE XXIV. *Cerebro-spinal meningitis; deafness absolute; membranæ tympani normal.*—May 22, 1872, D. W. K., æt. 21, a little more than three months since was attacked by some disease of the head, and for two weeks was stupid or delirious. There were some little spots on the neck. When he became conscious, he could not hear; he has remained deaf ever since. There seems to be absolutely no hearing power; cannot hear the voice even when conveyed to the ear through a tube; and is equally insusceptible of the sound of the tuning-fork or the piano. The membranæ tympani are of normal colour, transparency, and position; air enters the tympanic cavities.

CASE XXV. *Cerebro-spinal meningitis; sunken drumheads.*—Geo. S., æt. 25 months, when 14 months old had congestion of the brain, was unconscious, paralyzed, and had spots on the skin. Was found to be deaf when he recovered. Both membranæ tympani are sunken.

CASE XXVI. *Cerebro-spinal meningitis; sunken drumheads.*—May 31, 1873, John D., æt. 9, eight weeks ago to-day was seized with a pain in his head at about 8 o'clock A. M. The pain was said to be across the forehead. At 11 o'clock he had convulsions. There was spasm, especially of the hands and throat, at 8 P. M.; complained of headache; and at 11 P. M. he vomited. He became unconscious, and remained so until 4 A. M. Ten days after the attacks he was deaf, and still continues to be so. He states that there is a whistling sound in his ears. He took large doses of quinia, and soon recovered from all the symptoms, except a little uncertainty in his steps, and even now he has a somewhat tottering gait. He does not hear the watch at all; but can distinguish sounds conducted into his ear through a tube. The tuning-fork, when placed upon the teeth, produces a buzzing noise. The drum membranes are very much sunken, and of a pinkish hue; shows a small light spot.

CASE XXVII. *Cerebro-spinal meningitis; normal membranæ tympani; slight amount of hearing power as tested by piano.*—March 17, 1874, D. B., æt. 21, a little more than ten months ago was attacked with a chill, which was attributed to sitting upon a stone in the front of the house during the month of May. After the chill the patient became delirious, and his neck was stiff, and he had no use in his arms or legs. This state of things continued for one week. As soon as he became rational he was found to be deaf, and his left side remained paralyzed. He gradually recovered from the paralysis, though his deafness continues, and he staggers in his walk. Hearing distance: right 0, left 0. The tuning-fork is faintly heard in both ears; he is sensible to the tones of his own voice, and talks in a natural tone, modulating fairly. He thinks his right ear is the better one. By means of a conversation tube connected with the keys of a piano, he is enabled, through the medium of the right ear, to distinguish the C, D, and E of the treble, as well as all the bass notes. With the left ear he cannot distinguish the treble, the bass notes alone being audible. This is in accordance with the law of acoustics, that the impression of the bass or low notes remains longer on the ear, thus proving that the patient had still a slight trace of hearing power remaining in the cochlea, and that the statement that he heard better with the right ear was correct. The membranæ tympani are transparent, the pharynx is granular. The patient has been for some weeks under competent treatment, but without perceptible benefit.

CASE XXVIII. *Cerebro-spinal meningitis; normal membranæ tympani.*—May 2, 1872, Virgil T., æt. 5, four weeks ago was seized with a

severe pain in the head; soon vomited, and was delirious at times, especially on waking from sleep. He complains of pain in the back and neck, and also of pain in his right ear. Four days after the attack began he was found to be deaf, which was increased after a second attack of pain. Apparently there is an entire absence of hearing power. There is nothing marked in the appearance of the drum membranes. He totters in his gait.

Basilar meningitis, typhoid fever, scarlet fever, and measles are known to cause disease of the ear. The first-named disease usually affects the internal ear by direct extension of the inflammatory process from the base of the brain. In typhoid fever, however, the primary development, whatever the secondary affection may prove to be, exhibits itself in the middle ear, from "a propagation of the oral and pharyngeal catarrh to the Eustachian tube and cavity of the tympanum."¹ There may, however, be an extension of meningeal inflammation to the labyrinth. Almost the same may be remarked of scarlatina and measles. It is well known that the affection ordinarily resulting from those two diseases is suppuration of the middle ear. Of the various cases that have come under my notice, eight may be said to be distinctly traceable to one of the above-mentioned causes. Others that I have seen lead me to believe that an acute inflammation of the tympanic cavity may soon, without suppuration, pass to the labyrinth.

CASE XXIX. *Scarlet fever; deafness; no changes in the pharynx or outer ear.*—Jan. 28, 1870, S. M. J., æt. 5, had a mild attack of scarlet fever when he was eight months old; the mother discovered that the child was deaf four months afterwards. There would appear to be no hearing power. The tuning-fork causes no sensation. The pharynx and nares are in a healthy state, and the membranæ tympani show no changes.

CASE XXX. *Convulsions; deafness.*—Boy of six years of age. August 13, 1869. Two years ago he had convulsions which lasted for two or three days. After he recovered he was found to be deaf, and still continues in that state. Drumheads sunken on both sides. Appears to be totally deaf.

CASE XXXI. *Measles; no marked change in drumhead; deafness.*—Miss P., æt. 16, when seven or eight years old had measles, and about six or eight months afterwards became deaf in the right ear. Hearing distance: right 0, left $\frac{2}{4}$. She does not hear the tuning-fork from the right side, but can distinguish the sound of a voice conveyed to the drumhead through a tube. The membranæ tympani are normal, except that the light spot is dull.

CASE XXXII. *Hydrocephalus; deafness.*—Sept. 7, 1870, Carrie X., æt. 4, in June of this year had, according to the family physician, acute hydrocephalus; and when she recovered from it, was found to be deaf, and still continues so. There are no evidences of disease in the membranæ tympani or pharynx.

CASE XXXIII. *Meningitis; gradual deafness.*—June 25, 1870, W. K. J., æt. 27, complains of increased impairment of hearing. Had scarlet fever when a child, after which he felt a diminution in the hearing power. Last winter had congestion of the brain and hemiplegia of left side. His

¹ Niemeyer, Hackley and Humphrey's translation, vol. ii. p. 584.

right ear became decidedly worse at this time. He has recovered from the hemiplegia. There is no tinnitus aurium. The hearing distance on the right side 0, left $1\frac{2}{8}$. Tuning-fork is heard better on right side. The right membrana tympani is sunken, and has no light spot. The left is also sunken, and exhibits two reflections of light. Inflation of the ears improves the hearing on the left side.

CASE XXXIV. *Basilar meningitis; bilateral deafness.*—April 30, 1872, William R., æt. 27, says that seven weeks ago he could hear well, but after an attack of fever attended by delirium, he found, when restored to consciousness, that he had lost his hearing. There is a roaring noise in the left ear, but no other aural symptom. He can hear the watch when laid upon the right ear, but not at all upon the left. The tuning-fork is also heard more or less distinctly in the right ear. The right drumhead is somewhat sunken, the left very much so.

CASE XXXV. *Meningitis; inflammation of cerebral meninges and labyrinth; exposure to direct rays of sun.*—Sept. 8, 1873, Laura —, æt. 22 mos. The mother states that when the child was eight months old, and teething, she was unduly exposed to the direct rays of the sun, and was thereupon suddenly attacked with convulsions and was ill for three weeks afterward. The physician in charge observed that she was losing her hearing, and the mother thinks that she has not heard since that period. The drumheads are both very much sunken and have no light spot.

CASE XXXVI. *Basilar meningitis; effusion about auditory nerve; intermittent character of attacks; epilepsy; deafness; recovery.*—Jan. 29, 1874, Moses B., æt. 29, merchant, previous to July last heard perfectly well. He has had intermittent fever at different times for two years; had also an attack of sunstroke. In July he lost the hearing in one ear, and for four weeks he was deaf with both ears. After a course of counter-irritation his hearing gradually returned. He has taken a large quantity of quinia. Some weeks ago, while at Petersburg, Va., his hearing power again failed, and at the present time he cannot hear words at all; even the ticking of the watch is not perceived. He cannot hear the tuning-fork when placed upon the head, but feels it when on the teeth. The drumheads are somewhat opaque, and there is granular pharyngitis. He complains of a severe pain in the top of his head, and of a knocking sound in the interior. His countenance is very anxious, appetite poor, but he walks well. There is no history of syphilis. He had a severe fall upon his head, striking the occipital region, when he was seven years of age. I saw the patient first at my clinique at the University Medical College, and the next day at my office in consultation with his family physician. I did not see him again for two months, when, at the instance of Dr. Wm. A. Hammond, he called upon me, and to my great delight I found that he could now hear conversation with ease, and the watch at twenty inches; hearing distance $\frac{20}{8}$ on each side. He had been under Dr. Hammond's care for about four weeks.

Dr. Hammond treated the case by means of the iodide of potassium mixed with the bromide. This treatment relieved the cephalalgia and epilepsy. Subsequently he administered arsenic in consequence of the intermittent type of the epilepsy. The hearing power was suddenly restored on one side, and the other soon became better also.

Through the kind courtesy of Dr. H. G. Miller, of Providence, I have

been furnished with the following interesting history, and I was also afforded the opportunity of seeing the case:—

CASE XXXVII. Meningitis; inflammation of both auditory nerves; recovery of one.—December 29, 1873, H. S., a student of Trinity College, early in October, had an acute affection of the cerebral meninges and of internal ear, leaving him totally deaf in one ear, and nearly so in the other. I saw him first about ten days after the commencement of the trouble. His condition then was: External and middle ears perfectly normal; subjective noises very troublesome, and extreme giddiness on walking, and especially on attempting to go down stairs, and also in turning the head in either direction. Hearing distance: right ear, contact for a watch of 30'; left ear, 0. Tuning-fork heard by conduction in right, not at all in left. I put him on bromide and iodide of potassium, and soon began the use of the constant current. The right ear improved rapidly, and in about five weeks hearing distance became normal. For some time after that, however, through the two octaves of the piano, from middle C upwards, he heard, in addition to the note struck, another less than a semitone above, which produced a most disagreeable clang, and rendered music very unpleasant to him. I then saw Dr. Blake, in consultation, about the left ear. He found in it perception for higher sounds than normal, and that this perception was prolonged by the continued current; and advised the continuance of the electricity, and also the use of valerianate of zinc and conium. Since that time there has been but little change. He has at times heard the watch faintly, but cannot always be sure of it. The auricle of the affected ear was quite numb. No further treatment was advised.

CASE XXXVIII. Scarlatina; measles; mumps; deafness.—September 15, 1873, H. N. G., æt. 34, when two or three years old, is said to have had scarlet fever, and again at eleven years of age. He also had the measles and mumps in that same year. He never had any discharge from his ears, and but rarely any tinnitus. He did not hear the watch at all on the right side, and thought he heard it slightly when pressed on the left; but was not certain. The tuning-fork is heard more distinctly on the left side. The right drumhead is sunken, but the left one is normal. Air enters both tympanic cavities without difficulty.

CASE XXXIX. Meningitis; deafness; normal membranæ tympani.—Sallie A., æt. 13, three months ago was attacked with severe headache and vomiting; delirium at times, but generally consciousness retained. In three weeks the fever subsided. There was no paralysis. She did not hear well after being ill a few days. Was attacked on Saturday, and on Wednesday it was observed that she did not hear words, even when spoken very close to her. The patient complained then, as now, of severe tinnitus aurium; does not hear the watch at all. The tuning-fork is heard well and naturally. Jarring sounds hurt her head. There are no marked changes on the membrana tympani.

Primary Lesion of the Labyrinth.—Seven cases supposed, from various reasons given in the histories, to be affections of the labyrinth, arising primarily in the internal ear:—

CASE XL. Stupor; deafness; use of quinia.—Gertrude S., æt. 27 months, five months ago passed suddenly into a state of stupor; was very pale, and each day had severe fever. The treatment consisted chiefly,

according to the statement of the mother, in the administration of quinia. The little patient does not seem to have any hearing power. The drum-heads look well; both have good light spots.

CASE XLI. Primary labyrinth disease.—March 25, 1872, Martha —, æt. 11, when sixteen months old, had some kind of convulsions, and since has been deaf. Had spoken words and given other evidence of hearing before this. She never had any disease of the head, nor discharge from the ear. She cannot now hear the ticking of a watch, nor words spoken into the ear; but the vibrations of a tuning-fork are plainly perceived. Both membranæ tympani are sunken.

CASE XLII. Inflammation of labyrinth from cold induced by lying down while in a state of perspiration.—June 9, 1873, Geo. O'B., æt. 31, agent, one day last summer lay down while in a state of profuse perspiration. The next day he observed a singing noise in his right ear, and that then he did not hear well on that side. There were also darting pains across his head and the back of the auricle; is anxious and worried; states that he had an acute inflammation of the head some time since. Hearing distance: right ear, 0; left, $\frac{4}{8}$. The membranæ tympani show no signs of disease. The tuning-fork is heard most distinctly on the left side.

CASE XLIII. Exposure to draft of air, loss of substance on one side of face; deafness.—July 11, 1870, A. D. B., æt. 58, taxidermist, two years ago, while riding in a railway carriage, fell asleep, while a window was open near his head, and when he awoke he found that his face was numb and he was deaf. This deafness continues. There is some impairment of hearing on the other side from a chronic ear trouble, but the tuning-fork is heard only on that side. The patient has been a great sportsman, and has often been temporarily deaf from severe concussion. The watch is not heard at all on the right side, and $\frac{6}{8}$ on left.

CASE XLIV. Nervous deafness, perhaps secondary to tympanic catarrh.—Miss O. had the measles when a small child, which left her hearing somewhat impaired. What hearing power remained was lost in one night some months since. She cannot hear the watch, tuning-fork, or speech—in fact she is totally deaf. The drumheads are sunken; the pharynx is in a catarrhal condition. She has been thoroughly treated by a competent physician, but without effect.

CASE XLV. Convulsions; pain in ears; deafness; normal membranæ tympani.—Z. A. H., æt. 6, when eight months old, had spasms until the age of 13 months, sometimes having fifteen or twenty fits a day. After the convulsions had continued for four or five days, he was discovered to be deaf. The mother is certain that he could hear well before this time. During his illness he would at times put his hands to his ears. The recollection of the mother is not distinct as to whether there was any gathering in the ears, but she is inclined to think there was. The child seems to have no hearing power. Both membranæ tympani are normal in colour and position. The tonsils are large.

CASE XLVI. Pain; paralysis; deafness.—Maria L., æt. 3, when two years and a month old, awoke one night screaming with pain. She did not roll her head, or become unconscious, but lost power over her limbs, and had general febrile excitement. She was ill for one week, but it was two months before she could walk. On recovery, she was found to be deaf, and is now almost if not entirely devoid of hearing. The membranæ tympani of each side altered in curvature and colour.

Quinia.—I do not as yet lay much stress upon the power of quinia to produce impairment of hearing. I append the cases, however, in which the influence of this drug seems to have been felt in producing nerve deafness.

CASE XLVII. *Bilious fever; administration of quinia*.—J. F., æt. 28, artist, when fourteen years old had "bilious fever," and at that time he took a large quantity of quinia. Immediately after there was some impairment of the hearing power; and of late years tinnitus aurium has been very troublesome, and the hearing power is constantly lessening. The hearing distance, right ear, $\frac{0}{48}$; left ear, $\frac{1}{48}$. Tuning-fork heard more distinctly in the *left ear*. The right membrana tympani is very opaque, and has no light spot, but it moves on the Valsalvian experiment. Pharynx granular. The patient has been for some time under the care of a competent medical adviser, and has not improved.

CASE XLVIII. *Intermittent fever; administration of quinia; persistent tinnitus aurium; impairment of hearing; tuning-fork heard in healthy ear*.—M. K., æt. 35, nine or ten years since had intermittent fever, and took quinia in large doses. There was a persistent rumbling sound in the right ear when he recovered. He did not observe that there was any impairment of hearing until some weeks after, when he found the hearing power on that side gradually diminishing. At the present time he can hear the watch on the right ear only when closely pressed to it. The hearing distance of the left ear is normal. The tuning-fork is not heard at all on the right ear. The patient is a highly educated man, and a good observer.

CASE XLIX. *Fever; administration of quinia; complete deafness of one ear*.—Nov. 7, 1867, J. G., æt. 30, in 1862 suffered from sore throat and fever, while in the United States service on the Chickahominy; took quinia quite freely; and subsequently became perfectly deaf, so much so as to be pronounced unfit for duty. He eventually recovered his hearing on the left side. On submitting to the watch test, there appeared to be no hearing power in the right ear, though he could hear words on that side when conveyed through a speaking tube. There was no vertigo or other unpleasant head symptoms. The record is deficient as to the appearance of the drumheads. Inflation of the ear by the catheter and Politzer's method produced no perceptible effect on the hearing power. The tuning-fork was not employed in the diagnosis.

CASE L. *Intermittent fever; deafness; quinia administered*.—Willie R., æt. 3, five weeks ago had an intermittent fever, which was at first regular in character, but soon ceased to bear that aspect. Two weeks after the commencement of the fever, he lost his hearing power; and now, after careful investigation and testing, the conclusion is reached that he cannot hear at all. The membranæ tympani exhibit no change. He took quinia for the relief of the fever for one week; but how much, or in what quantities, is not known by the parents.

In thirteen cases the history was so defective—in one or two instances, from neglect on my own part to record the facts fully; in the others, however, from inability to obtain them—that no judgment can be formed as to the causes of the loss of hearing.

The following sad case is placed among affections of the internal ear from causes unknown, for reasons that the history will give. An exami-

nation of the temporal bone would have added very materially to our knowledge of the case. It is possible that the tinnitus and the head symptoms were caused by a cerebral inflammation which finally became an abscess.

CASE LI. *Tinnitus aurium for years; death from malignant pustule; cerebral abscess; cause unknown.*—Dec. 9, 1867, P. W., æt. 29, consulted me in regard to a distressing tinnitus aurium affecting the left side of the head only. This case has been alluded to by me in another place,¹ but it is of such interest, and throws such light upon the phenomenon of noise in the ear, that it may be worthy of more complete mention. The patient was very much depressed on account of the tinnitus aurium, which began a year before he consulted me. Indeed, he was almost melancholic, and at last gave up his business because his head troubled him so much; and in consequence of the persistent noise in it, he did not feel able to continue in any occupation requiring much use of his mental powers. The hearing distance in the right ear was normal; in the left it was $\frac{3}{4}$. The right drumhead was normal; the left was sunken and opaque. The action of the Eustachian tubes was sluggish, so that it was some time before air could be forced through them. This was finally successful by Politzer's method, when the hearing distance was improved to $\frac{5}{4}$. The patient remained under my observation and occasional treatment for a year or more; and his hearing improved so much that it became at one time $\frac{1}{2}$; but the tinnitus aurium was never essentially modified or diminished, and the patient became more and more gloomy. He died of malignant pustule Sept. 15, 1869. A post-mortem examination was made by George A. Sterling, M.D., of Sag Harbor. There was found to be great injection of the pia mater over the petrous portion of the temporal bone; and an abscess about the size of a ten-cent piece in the brain substance. It was bound by inflammatory adhesions, and contained about ten drops of pus. It was situated on the superior lobe of the left side, an inch from the median line and two inches from the line of the coronal suture.

CASE LII. Miss P., æt. 15; two years ago, without known cause, began to be deaf in the right ear; thinks the deafness came on gradually, but is not positive that it was not lost suddenly. Hearing distance: right, $\frac{0}{4}$; left, $\frac{4}{8}$. There is some pharyngitis; air enters both tympanic cavities. The tuning-fork is not heard at all on the side of the affected ear.

CASE LIII. G. Y., æt. 50, merchant; six months ago, rather suddenly observed deafness in the left ear, accompanied by a ringing noise. Hearing distance: right ear, normal; left, $\frac{0}{4}$. The tuning-fork is only heard in the right ear. After the tympanic cavities are inflated, the watch is heard when pressed upon the left ear.

CASE LIV. Boy, æt. 4; has not heard since birth; has always been well, and is now a robust child. No abnormal appearances in drumhead or pharynx. Does not seem to hear at all.

CASE LV. V. U., æt. 21; rather feeble; has congenital cataract. The hearing of the left ear suddenly failed three years since. He has nasopharyngeal inflammation. Hearing distance: right ear, normal. Watch pressed; the tuning-fork is not heard on the left side. The drumhead appears to be normal.

CASE LVI. Fanny C., æt. 3; had congestion of the lungs when three

¹ Roosa, Treatise on the Ear, p. 446.

months old, and has not heard since. The father and mother are first cousins. The drumheads appear to be normal, and the child seems to have no hearing power. She is well developed.

CASE LVII. *Æt.* 6; two or three years ago was accidentally observed to have lost the hearing power on the right side. Even words spoken into the ear through a tube were not heard. The membrana tympani was normal, except that the light spot was small. The hearing power was perfect on the left side. No cause for the loss of hearing could be given by the parents or family physician. The child was in fair health. The ears were inflated, but no effect upon the hearing power was produced.

CASE LVIII. Mr. P., *æt.* 46; two years ago, without any apparent cause therefor, experienced a diminution of hearing power. At times he had a ringing noise in the ears. Hearing distance: right, $\frac{0}{48}$; left, $\frac{6}{48}$. The tuning-fork is only heard on the left side. The drumheads are sunken. There is hypersecretion of the pharynx; had primary syphilis since the ear trouble began, and now has secondary symptoms.

CASE LIX. March 20, 1873, M. A. C., *æt.* 19, clerk, states he had scarlet fever nine months ago. There was no eruption, however, but his physician declares that to be the disease from which he suffered. When he recovered he experienced a "buzzing" in his right ear, and that he could not hear on that side, nor could he hear the ticking of the watch at all in the right ear. Hearing distance: left $\frac{48}{48}$. Both membranæ tympani have small and irregular light spots, and are somewhat sunken. The uvula is long and flaccid, and there is some pharyngitis.

CASE LX. July 2, 1873, Miss B., *æt.* 20, some years ago observed she could not hear from the left ear. There was no tinnitus—no discharge. Hearing distance: right $\frac{48}{48}$, left $\frac{0}{48}$. Cannot hear words, even through a tube. Hears the tuning-fork only on the right side.

CASE LXI. Sept. 29, 1873, Wm. L., *æt.* 16, states that he has been deaf in the left ear ever since he can remember; hears perfectly with the other; knows no cause, although there is a tradition in the family that the affection came from scarlet fever. Hearing distance: right normal, left $\frac{0}{48}$. The tuning-fork is heard only on the right side. The drumhead is normal.

CASE LXII. *History too defective for use, but diagnosis of nerve deafness made.*

CASE LXIII. Nov. 6, 1873, Mr. G., *æt.* 36, states he has had a buzzing and ringing sound in the left ear for thirteen months, and his hearing has become impaired on that side. Hearing distance: right normal; left, watch pressed on the ear. The tuning-fork is heard better on the right side. The left drumhead is very much sunken, and has no light spot. Air enters both tympanic cavities. The patient has had syphilis, but he gives no evidence of the disease now.

CASE LXIV.—Miss G., *æt.* 33, twenty years ago had scarlet fever, and since has not heard with the left ear. There is no tinnitus in it—no discharge. At times she cannot hear with the right ear when she has a cold in the head. Hearing distance: right normal; left 0. The tuning-fork is heard more distinctly in the right ear. She hears words through a tube placed in the left meatus. The pharynx is granular. Both membranæ tympani are sunken. Air enters right tympanic cavity freely, not so the left; but drum membrane becomes reddened.

CASE LXV. *Arrested development.*—A. G., *æt.* 9, has a diminutive auricle, and a very narrow auditory passage on the left side. The right ear is

normal; says he hears the watch a very little on the left side. The hearing power on the right is normal; the tuning-fork is heard better on right side.

The causes of diseases of the internal ear, so far as they may be deduced from the cases I have seen in private practice, may be classified as follows:—

<i>Traumatic</i> .—Injuries producing mechanical damage to the terminal auditory apparatus	4
Long-continued exposure to concussions producing congestion and inflammation of the internal ear:—	
Telegraph operators	2
Officers in navy	1
Boiler-makers (not included in table)	8
<i>Idiopathic</i> .—Hemorrhage into internal ear producing atrophy of nerve tissue	11
Inflammation of the parotid gland from which a catarrhal or periosteal inflammation extended to the labyrinth	2
Cerebro-spinal meningitis producing inflammation of the auditory nerve or the labyrinth or both	8
Scarlatina causing an extension of pharyngeal or meningeal inflammation to the labyrinth	2
Measles producing same effect	1
Basilar meningitis extending to auditory nerve or labyrinth, or both	7
Primary inflammation of labyrinth or circumscribed (about root of auditory nerve) basilar meningitis	8
Internal administration of quinia causing congestion and inflammation of base of brain and labyrinth (?)	4
Dr. Duffy's cases	(3)
From causes unknown	14
Arrested development	1
Total	65

ART. VI.—*Case of Aneurism of the Thoracic Aorta of long standing; gradually perforating the sternum, the orifice being plugged by a large clot which admitted of oozing and hemorrhage.* Observed in the Medical Clinic of Prof. Da Costa, at Jefferson Medical College. Reported by W. H. WEBB, M.D. (With four wood-cuts.)

THIS case, exhibiting so many striking features, was under observation from November 19, 1866, at which time it first presented itself at the Medical Clinic of the Jefferson Medical College. The history and condition of the patient at that time were thus noted:—

Ellen B., 35 years of age; native of Ireland; for a number of years a resident of Philadelphia and its vicinity; has had eight children, the youngest, which is still nursing, was born September 23, 1866. Her constitution and general health had been excellent from childhood. There was no hereditary tendency to disease; and her habits and mode of life have always been regular.

She stated that for three years previous to her coming to the College-clinic, she had been troubled with shortness of breath and palpitation of

the heart, and with a beating in her chest on exercise, all of which had been caused by a fright. That one night in September, 1862, she was awakened by a noise in her house, and in getting out of bed came in contact with a strange man; was much frightened, but succeeded in getting him out, after which she overheard conversation outside, to the effect that they would return when the moon went down. After the party had left she started off, with one child on her arm and another by the hand, across the fields and over fences to her nearest neighbour, a distance of about a quarter of a mile. Since that occurrence she had been troubled with beating in her breast. Her husband was in the army at the time, and it is supposed that the party was after bounty money.

It was noticed that the chest was unusually prominent, with distinct bulging at the upper part of the sternum, which was more perceptible on the left than the right side. There was also a very evident pulsation, particularly on a side view, and especially at the bulging; so powerful was it at the latter spot as to raise the hand, but with distinct intermissions. The chest had gradually assumed the form now presented; previous to the fright there had been no deformity.

She had not lost much in weight. Her colour was pale; expression anxious and uneasy; pulse, when standing, was 100, when recumbent, 92. The left radial and ulnar pulsations were distinct, as also those of the right carotid; that of the right subclavian very indistinct, and thence to the wrist it was imperceptible.

Sometimes her sight was defective; there was no headache or vertigo, or difficulty in deglutition, or hoarseness, yet the voice was not so strong as it had been previous to her trouble, though it was not changed in character. Her respirations were 24; tongue but slightly coated; appetite good; bowels constipated.

There was pain in the lower part of the bulging, and over the sternum, not constant, but sharp and lancinating, more severe in daytime than at night, but had no connection with embarrassed respiration with which she was sometimes troubled.

Percussion, which was painful, showed the most obvious dulness to be over the bulging and upper part of the sternum; lower down the dulness was connected, on the left side, with the cardiac dulness.

On auscultation, two sounds were heard over the mass; the first heavy and dull; the second short, not sharp or very distinct. The first sound corresponded with the beat. There was no blowing sound or thrill. The heart was not enlarged. Its first sound was rather dull and heavy, but not comparable in heaviness or force with that over the pulsating mass; its second sound was normal, but lacked sharpness and distinctness. The heart's impulse was strong, but not very forcible, and but slightly extended.

The diagnosis made was, aneurism of the aorta, affecting chiefly the vessel above its origin, the arch properly speaking not as yet being decidedly involved.

The treatment ordered was liq. ferri subsulphat. gtt. vj three times daily, with digitalin, gr. $\frac{1}{60}$ every six hours, and as much rest as possible.

1867, Feb. 18. She returned to the college clinic, stating she had not followed the treatment strictly on account of sickness of her youngest child. The tumour had increased since her first visit. There was no difficulty in deglutition; the voice remained the same. The sounds were the same; no murmur or thrill. The sounds in the sac were intermittent, as also the left pulse. On the right side no pulse was perceptible, and the right side

was colder than the left. The dulness was greater. The aortic arch had become implicated by the extension of the disease. Treatment continued, and empl. belladonna ordered to be placed over the mass for its protection, as well as to allay pain, with which she was sometimes troubled.

1868, Dec. 10. She returned to the clinic, when her condition was noticed to be about the same.

1869, Jan. 4. She returned to the clinic; her condition as regards the tumour remained as before. She was then pregnant. Treatment was continued.

Nov. 29. Since her last visit to the clinic the patient has been confined (March 18); her labour had no influence upon the tumour, as it presented about the same signs. Deglutition remained good. There was a feeling of great weight in the chest, with pressure and beating over the spinal column posterior to the tumour; and she was troubled with a frothy expectoration. The voice was unchanged. In place of the former treatment, vini ergot., \mathfrak{z} ij three times a day, with empl. opii over the seat of pain, were ordered.

1870, Sept. 17. The patient presented herself at the clinic, and it was noticed that the tumour had increased in an outward direction; the sounds remained as before; no murmur or thrill. She had considerable pain over the mass. Her chief complaint, however, was numbness of the feet, and obstructed breathing when walking. The right pupil was much the larger; there was some difficulty in deglutition. The right pulse was not perceptible, but the left was distinct. She was now ordered potassii iodid. gr. v, to be gradually increased to gr. x, three times a day, also tinct. opii deodorat. gtt. v, tinct. cannabis, gtt. iij, mist. glycyrrhizæ comp. \mathfrak{z} ij, to be taken as required, for dyspnœa.

Dec. 22. Her general health continued good. There was more irregularity of the heart's action, otherwise her condition was the same; there was no perceptible increase in the tumour. A pill containing belladonna was for the time ordered.

1871, July 31. The patient was at the clinic; the tumour had increased in size, and was pointing over the sternum, with discolouration of the surface. On feeling over the mass, several hard points were quite perceptible. She complained of pain and soreness in the back. The breathing was oppressed. Ordered potassii iodid. gr. x, tinct. verat. virid. gtt. iij, tinct. cinchon. comp. \mathfrak{z} j three times a day. Empl. belladonnæ.

1872, Nov. 13. She stated that in May last, while at house-cleaning, she received a severe blow upon the tumour, caused by a large scrubbing-brush falling upon it; and it was noticed that after this accident the tumour had *diminished considerably* in size, though it was larger then than it was some years ago. There were two sounds; the first heavy and dull, the second distinct, with no murmur or thrill. There was no pain, but she had occasional difficulty in swallowing. Pulse 110, the right being imperceptible; respirations were 24 per minute. The right pupil was considerably larger than the left. There was no cough or alteration of the voice. Treatment continued.

28th. The patient states that, on the night of the 25th inst., she awoke with a smothering sensation, and could not speak; her breathing was very rapid, and there was loss of power of the right side. She remained in that condition about three hours, when she gradually recovered; the bowels had not been moved for nearly a week. The tumour was

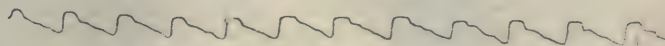
noticed to have enlarged very much ; her expression was denotive of great distress. Treatment continued, with pil. rhei comp., one, night and morning.

Dec. 5. The patient stated that she thought she had taken cold, as she felt so sore about the breast, especially upon the left side, and around and under her left shoulder. The pain about her breast last night was so intense and constant that it prevented her from taking the recumbent posture, and she had to content herself in a chair all night.

1873, *July 28.* She now complains of having chills at night, of losing flesh, and of pain in the back and under the left scapula. Treatment continued, except pil. rhei comp., in place of which a pill consisting of quiniæ sulph. gr. iss, ext. cannabis, gr. $\frac{1}{4}$, ext. hyoseyami, gr. j was given three times a day.

Sept. 21. Her general condition not materially altered, but the pulsating mass was larger. The iodide of potassium, which she had for some time taken irregularly, was abandoned.

Fig. 1.



Sphygmographic tracing taken Nov. 23, 1873, the patient having been kept at perfect rest for three hours previously.

1874, *Jan. 14.* A note was received from the patient, in which she states, "I would like to see you to-morrow, if convenient, on account of my breast ; the plaster fell off to-day, and it [the tumour] looks in appearance worse than I ever saw it. I am pretty lively, but it has preyed on my spirits greatly." The swelling presented a very ugly appearance, having, apparently, ecchymosed spots, radiating from which could be distinctly seen the cutaneous capillary vessels, intensely distended. She complained of a burning pain in the tumour, but this was not constant. At the most anterior portion was a spot about three-quarters of an inch in diameter, covered by the merest film, and looked as though ulceration was taking place, and the current of blood could be felt beneath it. A plaster was applied consisting of equal parts of empl. opii and empl. aconitii, which was worn as much for protection of the mass as to allay pain. The plaster consisted of two pieces : one piece, about two inches in diameter, was placed on the apex of the tumour ; the other piece was about eight inches in diameter, with a circular piece of about one inch in diameter cut out of its centre, and this plaster was cut through from the circle to the outer edge, so that it would the better accommodate itself to the mass. (See Fig. 2.)

Feb. 21. She was found to be in great distress of mind, owing to her finding a spot of blood upon her under-garment, which had oozed through the pores of the sheepskin upon which a plaster had been spread. She also had considerable pain in the left side of the neck, anterior to and including the sterno-cleido-mastoideus muscle, running down below the clavicle and extending through to the back of the same side ; there was some cough, with a thick, tenacious yellow expectoration, streaked with blood. The pupil of the right eye was much larger than that of the left ;

at times there was some difficulty in deglutition. Morph. sulph. gr. $\frac{1}{2}$ was ordered to be taken occasionally.

Fig. 2.



Appearance of tumour Feb. 23, 1874, when the serum of the blood was oozing through the pores of the sheepskin upon which the plaster was spread.

26th. About 4 $\frac{1}{2}$ P. M. the tumour ruptured externally at its most anterior portion, and it was stated that "the stream of blood was about the size of a lead pencil, and that after she had lost about a quart of blood it suddenly stopped." Comparing her condition with that of the previous day, and examining the various cloths saturated with blood, it would be safe to say that she lost from sixteen to twenty ounces of blood. She was found almost pulseless with blood still oozing from the rent, which was immediately arrested by the application of liq. ferri subsulph. dil. (two parts to one of water).

March 3. Prof. Da Costa visited the patient, and found her in her usual bright condition. There had not been any loss of blood since the 26th ult.; no murmur or thrill could be detected; there was considerable cough, which was relieved by a narcotic mixture.

4th. There had been considerable hemorrhage during the night, but upon the free application of liq. ferri subsulph. dil., it was arrested.

6th. She has become very restless; her expression has changed very much during the past twenty-four hours; she has some trouble in deglu-

tion, and complains of considerable pain in the tumour as also in the left shoulder, with numbness and loss of power in the arm of that side. Morphine sulph. gr. $\frac{1}{4}$, which had been given p. r. n., is now taken every two hours.

7th. The tumour has enlarged very much during the past twenty-four hours, which is more perceptible upon the left side. She has lost considerable blood during the day owing to the reopening of the rent; deglutition is difficult and painful, the pain being burning in character; intense thirst; no fever; pulse frequent and easily compressible.

10th. The pain in the tumour has been excruciating for the past two days, requiring morphine sulph. gr. $\frac{1}{2}$ every hour for its relief. The expression of countenance is indicative of the most intense suffering; the sunken eyes, the pinched nose, the hollow cheek, the upper lip drawn above the teeth, the skin cool and glossy, and the pulse rapid and almost imperceptible indicate her suffering and exhaustion. Stimulants and morph. sulph. were given throughout the day.

11th. Passed a rather comfortable night, was somewhat cheerful, and notwithstanding her extreme weakness she endeavoured to give a description of a ludicrous dream she had had during the night. On examining the tumour it was found that protruding from the rent in the sac wall, at its most anterior portion, was a mass of laminated fibrinous clot, through which the serum of the blood had been oozing for some hours; the liq. ferri subsulph. dil. was applied, which would arrest it for a time only. The difficulty in deglutition had increased, was very painful, and was worse with liquids than with solid food; thirst is very annoying. There is, however, no fever; the pulse is small and frequent.

12th. There was considerable hemorrhage during the night and morning, which was very difficult to control, for, as soon as a good coagulum would be formed by the liq. ferri subsulph. dil., applied by means of the hand atomizer, it would be washed away. The bleeding stopped, however, of its own accord after the loss of from eight to twelve ounces.

13th. Very restless all night; respiration difficult and painful; the pain on deglutition has increased, and at times she refuses to take food or drink. The fibrinous clot, which has been gradually protruding for the past few days, is now about ten inches in circumference, and protruding about three inches beyond the sac.

14th. Her articulation has been difficult since early last evening, and she is at times unconscious, refusing food and drink. The position most comfortable to her, when in bed, was upon her right side, and as the result of a test, more pain was experienced when lying upon the back than upon the left side. She died of exhaustion at 8 P. M.

Eighteen hours after death a plaster cast was taken of the tumour, including the space bounded by the thyroid cartilage to the ensiform cartilage, and laterally on a line with each axillary space (See Fig. 3. The tumour had receded considerably from the time of death to the taking of the cast, the body having been placed upon its back, consequently the model does not represent the tumour as large as it was during life), after which, with the kind assistance of Dr. A. C. W. Beecher, the post-mortem was made; present Drs. Andrews, Allis, Hearn, Rex, and Frank West.

An incision was made around the mass of protruding clot, about half an inch below the margin of the skin surrounding the same, thence down the median line to a few inches below the ensiform cartilage; an incision was also made along the anterior portion of each clavicle to meet the cir-

cular incision, the flaps thrown aside, and the specimen, which included the sternum, costal cartilages, and about two inches of each clavicle, was removed.

Fig. 3.



Tumour showing protrusion of the clot.

The inter-clavicular portion of the sternum is almost entirely absorbed; the sterno-clavicular articulations are intact. The sternum is absorbed down to the upper margin of the third costal cartilage, extending on the right side to within half an inch of the right margin; on the left side the sternum is entirely absent, including a portion of the costal cartilages of the first and third ribs; the sternal extremity of the second rib of the same side is necrosed and its cartilage entirely absorbed. The erosion of the sternum on its posterior surface extends down to near the lower margin of the third costal cartilage.

The aneurism commences about one inch and a half above the aortic opening and terminates at the beginning of the thoracic aorta, involving the whole of the arch. The sac extended forward, attaching itself to the anterior wall of the chest. The pleura was closely adherent on both sides of the sac, and was pushed off from the middle line as the sac advanced towards the sternum; the upper and inner portion of the left thoracic cavity being decidedly encroached upon by the sac. Marked adhesions of

the apex and anterior portion of upper lobe of the right lung to the costal pleura; the apex and upper lobe of left lung are adherent to the aneurism.

The innominate artery is much dilated, about an inch in diameter at its origin; above it is much larger; a dilatation exists on its inner side at the root of the right common carotid artery, and it there has the capacity of a hulled walnut, evidently a beginning secondary aneurism. In the third portion of the arch, on its outer and left side, is another marked dilatation as large as half a walnut, which also shows the beginning of another aneurism, which would eventually have become fused into the main sac.

Fig. 4.



A posterior lateral view of the specimen, showing the dilated innominate artery and the dilatation on the outer and left side of the third portion of the arch, and also the separation of the coats of the subclavian artery.—Posterior lateral view of the specimen, showing, A A, the clavicles; B, the separation of the coats of the subclavian artery; C, the dilated innominate artery; D, dilatation on the outer and left side of the third portion of the arch; E, plate of ossific matter; F, first portion of aorta, the pericardium having been removed; G, the heart.

Large patches of ossific matter and atheroma extend down through the remainder of the aorta.

The aneurismal sac passes up from the front of the arch of the aorta to

the top of the sternum, below to a line with the upper portion of the ensiform cartilage. On the left side it extended beyond the costal cartilage and overlaid the ends of the five upper ribs, and on the right side about half way over the costal cartilages.

On the posterior portion of the arch of the aorta is a deep longitudinal groove in which laid the trachea. The trachea was much flattened at its bifurcation, and about three inches above was a marked indentation; both the flattening and indentation remained after the removal of the trachea from the tumour.

The anterior margin of the sac is attached to the sternum at the point of erosion, and when it became perforated, and until the skin ruptured, the skin and cellular tissue formed the upper and anterior portion of the sac wall. The whole of the sac is filled with a very solid clot, which extends through the sternum, and by its pressure forwards the cellular tissue and skin were absorbed until the skin parted, when it protruded, thus plugging the orifice, the clot advancing, the opening in the skin enlarging until the time of death, when the clot extended beyond the surface level of the body fully three inches and measured in circumference, at its base, ten inches. The clot burrowed down from the opening through the sternum to the superior margin of the fourth costal cartilage; above to the top of the sternum; two and a half inches to the left of the middle line and one and a half inches to the right of the same.

The pouches in the innominate artery and third portion of the arch are also filled with very solid clots. The current of blood was kept up between the clot in front and the posterior wall of the aorta.

With the specimen is included about one inch of the right subclavian artery, the external coat of which is separated from the internal coats (see Fig. 4); but as to how far this separation extended onward was not ascertained, and as to how far it extended downward could not be determined without material detriment to the specimen.

Connective tissue about the sac is very dense and closely adherent, and very markedly so about the arteries and veins in the neighbourhood. The cellular tissue behind, above, and anterior to the upper portion of the sternum, is almost as dense as cartilage.

Pneumogastric nerve of the left side is flattened opposite the tumour, and closely invested in cellular tissue.¹

Heart one-third less than the normal size, with considerable fat upon its surface. Structure of the ventricles rather dense; auricles very flabby. Valves opaque and somewhat roughened, but competent; the heart tissue free from fat. There was about a half pint of straw-coloured serous fluid in the pericardium.

Lungs. The upper lobe of the left lung somewhat compressed; lower and posterior portions of both lungs, particularly the right, congested, probably hypostatic. No fluid in the pleural cavities.

The autopsy was made at the request of the patient—a woman of more than ordinary intelligence and education.

About fifteen months previous to her death, she stated, to the effect, that she knew her case was a rare one, a disease in which the struggle between soul and body was useless, and the result so sure but so stealthy; that it had excited more than ordinary interest in those of the medical

¹ This same feature was noticed, but unavoidably omitted, in the case reported in the *Philadelphia Medical Times*, vol. iii. p. 820, 1873.

profession who had seen it; that an examination could be made at the proper time, as it might be the means of saving the life of some fellow-being; and that that portion of her case being of the most interest, she bequeathed to her medical attendant.

The case is familiar to the students and graduates of the various classes of the Jefferson Medical College, from the session of 1866-7 to that of 1873-4 inclusive; and when called upon to be present at the College clinic, which was done once or twice during each session, her acquiescence was always pleasant, and she seemed as much pleased to know that she was the means by which so much instruction could be gleaned by the students, as they were anxious to see and examine her case.

It is a noteworthy fact that the patient nearly always maintained a cheerful frame of mind; notwithstanding that she had been time and again assured by those whom she had consulted, that her life hung by the merest thread, she but rarely experienced any depression of spirits or felt any terror at the idea that, probably, in a second's time, without a moment's warning, her life would pass away. The time did come and it lasted for days: days of terrible suffering that only a woman can endure.

Irrespective of the calm mental condition, this case is chiefly remarkable for the following circumstances: 1st. Its duration, a period of about *eleven years*. 2d. The aneurism being uninfluenced by her pregnancy and the throes of labour. 3d. The blow received from a large scrubbing-brush falling upon the tumour, causing it to diminish considerably in size, a result contrary to any reasonable supposition. 4th. The time elapsing between the first hemorrhage to the termination of the case, a period of about sixteen days: and 5th. The use of the hand atomizer to control oozing and hemorrhage, for by the use of this apparatus crevices and interstices were under complete control of the chemical styptic, until the exhaustion of her strength rendered all interference nugatory.

Medical literature is not rich with the records of cases of aneurism of the thoracic aorta, where external rupture has occurred, it also being a form of termination exceedingly rare. Having had access to the libraries of the College of Physicians of Philadelphia, and of the Pennsylvania Hospital, it was thought that a synopsis of the cases found upon record would not be uninteresting to the profession. Seventeen cases have been collected, and they have been tabulated in the order in which they have been recorded.

Table of Seventeen Cases of Aneurism of the Thoracic Aorta

Case.	Recorded by	Where recorded.	Sex.	Age.	Causation and early history.	Marked phenomena during progress of case.
1	W. Hunter	Med. Observations and Inquiries, vol i., London, 1763	M	39	Worked very hard at his business, stay-maker, when he was very weak just after an illness of nine months. First began to be uneasy in his chest.	Swelling between the cartilages of the second and third ribs of the right side; it was very hard and painful on pressure. Pain darting through to right shoulder; strong pulsation of the tumour, perceptible to the eye; dyspnoea; discoloration of skin some months before rupture; most ease when lying on left side; considerable cough.
2	Dickson	Med. Observations and Inquiries, vol. iii., London, 1769	M	39	No cause given. Tumour appeared at the anterior extremity of the right clavicle, of the size of a walnut, had been increasing for about three months.	Tumour had a strong pulsation; clavicles were separated from the sternum, the space was filled up by the tumour; five months before its appearance, he had violent pains in the breast and right collar bone; the skin became discoloured and painful to the touch, as if pins and needles were running into it.
3	John Moodie	The Medical and Physical Journal, vol. xi., London, 1804	M	34	Kicked by a horse in the left breast three years previous to the appearance of tumour.	The tumour was attended with a strong pulsation; his rest undisturbed.
4	Joshua E. White	Medical Repository, vol. vii., New York, 1804	F	55	No cause assigned. She had been for many years affected with rheumatism.	Tumour was under the upper part of the sternum; during the last three weeks of her life the swelling increased rapidly; skin discoloured; strong and violent pulsation, evident at the distance of several feet; pain and restless nights.
5	Joseph Ward	London Med. Repository, vol. xx., 1823	M	56	No cause assigned.	Large tumour on right side of chest, below the clavicle; dyspnoea; excessive pain in right arm; tumour increased; a dark spot appeared, from which arterial blood oozed.
6	Mr. De-lort	Phila. Journal Med. and Phys. Sci., vol. xiii., 1826	M	50	Had been subject to palpitation three years ago. Health had undergone no alteration till an attack of pleurisy about a year ago, since which time he had not been well.	Dyspnoea; palpitation frequent; sternum, which had previously appeared more prominent, exhibited on its anterior left surface, and about the level of the fourth rib, a fluctuating tumour, which gradually increased; dyspnoea now so great that he was obliged to remain in the sitting posture; apex of tumour opened and a little blood oozed out, mixed with pus; suppuration abundant; tumour disappeared; another formed in three weeks, fluctuating and pulsating; the skin of apex became gangrenous, and the sac lessened a second time, pus escaped, and some blood, rather discoloured; next day tumour had disappeared; digestion became imperfect, and diarrhoea supervened.
7	Alexander Rainy	The London Med. and Phys. Journal, N. S., vol. iii., 1827	F	48	Cause not stated. Had been subject to palpitation for two years.	Dyspnoea; paroxysmal cough; palpitation distressing; fourth and fifth ribs at their anterior extremity more prominent, and extremely painful on being touched; skin discoloured.

with External Rupture, for the most part not immediately Fatal.

Duration of case.	Duration of case after rupture.	If one or several ruptures.	Pathological appearance.	Remarks.
About three years	About five weeks	Several ruptures; more or less oozing from first to last	Sternum eroded through; left subclavian and jugular veins compressed by the dilated artery, but little left of their natural capacity and appearance; sac pressed against the trachea, the substance of both almost destroyed. Some of the bodies of the vertebræ were almost eroded through to the spinal canal.	First case the writer of the present article has been able to find on record. It came under the care of Dr. Hunter in December, 1749, and died October, 1752, at St. George's Hospital. He says: "I gave it as my opinion that it was an aneurism of the aorta, that it was absolutely incurable; and that he would most probably die of its bursting either outwardly or inwardly."
Less than two years	Less than four days	Two ruptures, oozing in the interval	The first bone of sternum almost destroyed; also considerable of first rib on right side; the right clavicle much eroded, the other much diseased. Several small pieces of ragged bone adhering to the inside of the teguments, and others mixed among clotted blood.	Case came under the care of Dr. Thomson, Surgeon to the London Hospital, July, 1762, and died February, 1763.
About three years	Less than twenty-four hours	Two ruptures	Lungs paler than usual; carotid and subclavian arteries were a little ossified. The aneurismal sac was ossified in several places. Some of the vertebræ were eroded; the sternum was eroded through.	Case came under observation November, 1783, died the following month.
Cannot be stated for the want of data	Died immediately after rupture	One rupture	Autopsy not permitted. The orifice was about the size of a dollar. The clavicles were separated from the sternum, the latter considerably elevated.	Case occurred in May, 1799. Two small punctures had been made in the anterior part of the swelling, at patient's request, upon the supposition of its being an abscess. The person who made the punctures said, "it cut like gristle."
(History incomplete.) Under observation about 14 months	About twenty-four hours	One rupture	"Nothing very particular presented itself."	
About nine months	(No distinct rupture.) A fistulous opening admitting of discharge, for a few months, of pus, and blood discoloured		Body much emaciated; chest very prominent; opening in the sternum about the fourth rib an inch in diameter, above this another opening about four or five lines in diameter. Tumour of the size of an infant's head of one year old, between the two lungs. Anteriorly the tumour was adherent to the pericardium; heart hypertrophied.	This patient evidently died of exhaustion, which was increased by an attack of diarrhoea.
About one year	Died immediately after rupture	One rupture	Body much emaciated; completely exsanguinous; left mamma purple, with an opening externally, the size of a penny; bulk of mamma greater than in prime of life.	

Table of Seventeen Cases of Aneurism of the Thoracic Aorta

Case.	Recorded by	Where recorded.	Sex.	Age.	Causation and early history.	Marked phenomena during progress of case.
8	Not stated	The Lancet, vol. ii., London, 1828	F	53	Cause not stated. Excepting a cough, to which she had been subject for 13 years; had always enjoyed good health. Pulsating tumour right of sternum, just below the clavicle; had previously experienced great pain in those bones, and extending along the side of the neck; swelling gradually enlarged and became painful.	Below the right sterno-clavicular articulation a circumscribed prominent swelling with circular basis about three inches in diameter, elevated at its centre into a conical protuberance; base occupies the right half of the sternum at the junction of the second and third ribs with that bone, and the sternal articulation of the right clavicle; swelling elastic, and pulsates throughout, the beating being sensible to the eye as well as to the touch; cough with blood-streaked expectoration; has pain in the head when she lies on the right side; apex of the swelling discoloured.
9	John Reid	Edinburgh Med. and Surg. Journal, vol. liii, 1840	M	31	He stated that six years ago he began to complain of pain behind the upper part of the sternum; that twelve months after this a tumour about the size of a nut presented itself near the sternal end of the right clavicle; and that he has been troubled with dyspnoea. Habits temperate, and general health good.	Tumour, pyriform shaped, projected about three inches in front of the sternum, about three inches and a half in circumference; pulsating; there was a loud bruit over the tumour, and also accompanying the sounds of the heart; impulse strong and felt below the sixth rib; tumour increased in circumference, and projected from its anterior surface a smaller tumour, and prolonged outwards two inches beyond the surface of the broader tumour below; apex became first livid, and then of a dark colour.
10	M'Intyre	Trans. Path. Soc., vol. i., London, 1848	F	53	Cause not stated. Had a swelling on right side of the chest. Dyspnoea, and sensation of distress in the chest.	Swelling between the first and second ribs close to the sternum, edge of which it seemed to overlap; it was the size of a large walnut, with distinct, strong pulsation; tumour became irregularly oblong, bulging at each end; it gradually increased, then became obviously reduced in size, remained stationary awhile, then subsided rapidly, losing its prominence, its existence evidenced only by pulsation and dulness on percussion. She now enjoyed better health than for many years. It again increased, gained its former size, which was hastened by an attack of bronchitis; the skin became red, a slough appeared at the upper part of the tumour, formed an aperture by which blood escaped.
11	Wm. Stokes	Diseases of the Heart and the Aorta, Philada., 1855	F	Bet. 35 & 40	Cause not stated.	Pulsating tumour in the lower sternal region; discoloration of the skin over the most prominent part of the tumour, followed by a slough and separation of the integuments, so as to display the outer surface of the coagulum. After some days the coagulum gave way, and a deluge of blood was poured out. The nurse instantly stuffed a portion of a cotton apron into the opening in the chest; patient recovered for the time, and for days subsequently her life was depending upon the precarious support of a cotton rag.

with External Rupture, for the most part not immediately Fatal.

Duration of case.	Duration of case after rupture.	If one or several ruptures.	Pathological appearance.	Remarks.
About nine months	About seven weeks	Several ruptures, oozing in the interval	Aneurismal tumour filled the middle and upper part of chest, from the base of the heart to the root of the neck; it adhered to the back of the sternum, clavicular articulation in front, and pressed on the trachea behind; arteria innominata involved in the right and anterior part of the tumour; it was dilated and formed part of the aneurism. Anterior surface of the aneurism adhered closely to the back of the sternum throughout the upper half of the bone. Back of the tumour had become firmly adherent to the front of the trachea, and had pressed on the tube so as to flatten it slightly.	Case came under the care of Mr. Lawrence, at St. Bartholomew's Hospital, 1828. Pathological appearances in this case simulate very much those of the one just recorded: the situation of the tumour; its adherence to the back of the sternum; the flattening or indentation of the trachea, and the dilatation of the innominate artery.
About five years	Two days	Two ruptures. Some oozing the day previous to first rupture	The most dilated part was near the origin of the arteria innominata. A rounded opening in the walls of the sac passed partly through a notch in the upper and right side of the sternum, and partly through the interval between the sternum, first rib, and clavicle. Left ventricle of heart dilated and hypertrophied. Semilunar aortic valves shortened; thickened along their margins, and were inadequate.	
About seventeen months	Not stated. (No data)	One rupture	Swelling lost much of its prominence; the aperture was nearly central; sternum perforated, and would admit the finger, round and smooth; tumour had contracted extensive adhesions with the surrounding parts. An adjoining portion of lung had a carnified appearance; heart flaccid. Neither that organ nor the thoracic tumour had been opened.	
Not stated. (No data)	Not stated. (No data)	Not stated. (No data)	Not stated.	

Table of Seventeen Cases of Aneurism of the Thoracic Aorta

Case.	Recorded by	Where recorded.	Sex.	Age.	Causation and early history.	Marked phenomena during progress of case.
12	Wm. Stokes	Diseases of the Heart and the Aorta, Philada., 1855	F	46	Not stated.	External tumour, covered merely by integument, the latter slightly discoloured and becoming thinned. Shortly after her admission into hospital, skin gave way, and an opening as large as a four-penny piece was found, through which a large quantity of blood, partly fluid, suddenly issued. This bleeding was partly checked by a large coagulum blocking up the orifice; slight oozing continued for a day or two, when another alarming hemorrhage took place. In this way the case proceeded for about ten days, the blood gushing at every second or third day, and oozing out in the intervals.
13	J. H. Packard	Amer. Journ. Med. Sci., vol. xxxvi., 1858	M col'd	38	He stated that he had enjoyed good health up to July, 1857, when he had a slight cough; soon after this he perceived a lump in front of his chest.	The lump had attained the size of a foetal head, seated at the upper part of the sternum, to the right of the median line; pulsation was evident all over it; sounds of heart transmitted, deepened in pitch, and, as it were, renewed or intensified in the tumour; the right radial pulse was a little feebler than the left, but was not permanent. Pain shifting between shoulders and tumour; increase of the swelling rapid during latter stages of the disease; discoloration of the most prominent part of tumour.
14	Prof. Gross	Proc. Path. Soc. of Phila., vol. i., 1860	M	37	Had always been in ill health.	Disease apparently of only six months' duration, as far as it had attracted attention. Great prominence of the upper portion of the chest; a pulsating tumour; intense dyspnoea; great emaciation. About six weeks before death an abscess pointed near the median line, three days after it burst and discharged sanious matter.
15	W. H. Dickinson	Med. Times and Gaz., vol. i., 1860	F	51	Had suffered occasionally from pain passing down the outside of the left arm to the ends of the fingers. Early in September she observed a small projection on the front of the chest close to the left side of the sternum, on a level with the nipples.	March 12, there were two brownish-red spots in upper part of tumour, from which oozed a little watery fluid. On the 24th inst. she complained of a sudden sensation of faintness, immediately afterwards the blood gushed from the aneurism; fell into a state of collapse.
16			M col'd	49	Was accidentally thrown down violently; two years after it was noticed that a tumour began to make its appearance on the right side of the chest.	Not stated.

with External Rupture, for the most part not immediately Fatal.

Duration of case.	Duration of case after rupture.	If one or several ruptures.	Pathological appearance.	Remarks.
Not stated. (No data)	About ten days	Several ruptures, oozing in the interval	No autopsy. On removing the compresses, the external opening was found greatly enlarged, being of the size of a half-crown piece.	
Less than a year	About ten hours	Several ruptures, previous oozing	Anterior wall of aneurismal sac, as well as the skin over it, extremely thin, and separation difficult. "On introducing my hand into the sac, I felt several pieces of roughened bone <i>within its cavity</i> . Two of these evidently remnants of the sternum; they were irregular in shape, bare, and eroded." The end of the right clavicle, and upper two ribs on the same side, in a similar condition, projected through the wall of the sac; both sterno-clavicular articulations were absorbed. Above the second rib sternum entirely gone except a slender strip on the left side.	With reference to the bone within the cavity, this case simulates that recorded by Dr. Dickson.
Less than a year	Not stated	One rupture	Right lung adherent to tumour and hepatized; the pleura thickened, and contained at least three pints of coagulated blood; pericardium adherent to heart; left lung adherent, and some effusion in the left pleural cavity. Sternum at one place absorbed, and several ribs had given way; innominate artery somewhat dilated.	The immediate cause of death was the opening of the tumour into the pleural cavity, and the case is, therefore, particularly interesting as showing that death may result by internal rupture after external rupture has taken place.
Less than a year	Half an hour	One rupture	A hole as large as the palm of the hand, formed by erosion of the second, third, and fourth ribs, and left edge of the sternum. Aorta very atheromatous, especially in the abdomen.	
Less than a year	Less than twenty-four hours	One rupture, oozing for some days previous	Dr. Allis has the specimen dried, consisting of the sternum, a portion of all the ribs of either side, and the aneurismal sac, which is attached to part of the posterior part of the sternum and some of the ribs of the right side. It shows that the intercostal muscles between the fourth and fifth, and fifth and sixth ribs had been absorbed for the space of two or three inches, commencing at the right margin of the sternum.	This case was communicated to the writer by Dr. Allis, who intends to record it more fully at an early day. It occurred in 1872.

Table of Seventeen Cases of Aneurism of the Thoracic Aorta

Case.	Recorded by	Where recorded.	Sex.	Age.	Causation and early history.	Marked phenomena during progress of case.
17	McCall Anderson	The Lancet, June 13, 1874	M	34	Formerly a joiner. Last four years a French polisher; has been required to lift heavy weights. Habits temperate. Three years ago he complained of palpitation, and twenty-one months after this he experienced sharp pain in the left breast, which extended into the left shoulder and down the arm. "A beating above the breast bone."	Dilated hypertrophy of the left ventricle, with a double murmur at the base of the heart; pulsating tumour in the jugular fossa, tender to the touch; difficulty of swallowing; loud, rasping, systolic murmur heard over the tumour, also over the whole chest, in the vessels of the neck and arms, more marked in those of the right than those of the left side, and in the thoracic and abdominal aorta. Apex beat of the heart situated $3\frac{1}{2}$ inches below and $1\frac{1}{2}$ inch to the left of a vertical line drawn through the nipple; impulse of the heart heaving, and observed over a preternaturally extensive area.

ART. VII.—*The Relation of Ozone to Disease.* By J. F. BALDWIN, A.M., M.D., of Columbus, Ohio.

THE rise and progress of epidemics has always been a subject of great interest, and every theory advanced to solve the problems connected therewith has been favourably received and has not lacked able advocates. No sooner, therefore, had Schönbein announced the nature and properties of ozone, and suggested the hypothesis of its relation to disease, than it was enthusiastically seized upon as the long-sought *entity* by which could be explained the mysteries connected with all epidemics.

The well-known effects of artificial ozone as an irritant of the air passages, and as a deodorizer and disinfectant, suggested that its abundance in the air would lead to epidemics of certain inflammatory diseases; while its absence would allow septic material to accumulate till an epidemic of some one of the zymotic diseases should either arise *de novo*, or be greatly augmented in extent and virulence.

In a recent monograph, I find the following statement, which may be regarded as the most ultra expression of the views advanced by those who adopt these theories:—

"The modern discovery of ozone furnishes us the key to unlock the mysteries of the causes of all fevers, of whatever nature or form or dimension, of either inflammatory, bilious, or typhoid; being all produced by the variation or want of this substance in the air inhaled. There were influences operating in pro-

with External Rupture, for the most part not immediately Fatal.

Dura- tion of case.	Dura- tion of case after rupture.	If one or seve- ral rup- tures.	Pathological appearance.	Remarks.
About three years	Three days	Several rup- tures, oozing in the interval	Nothing remarkable with the excep- tion of a dark, prominent mass, which protruded from the skin im- mediately above the supra-sternal notch. It had an oval shape, and measured about three inches from above downwards, and two inches across, composed evidently of co- agulated blood. It communicated by an aperture in the skin, with an aneurism of the aorta. Heart much enlarged, left ventricle in particular being hypertrophied and dilated.	This case was treated by galvano- puncture, the patient died before a cure was effected.

ducing different diseases of which we were ignorant: *ozone, and ozone alone, furnishes the key to unlock and reveal the whole mystery.*"

In discussing the relation which ozone may sustain to disease, I shall consider it as, 1st, a cause; 2d, a remedy; and 3d, a preventive.

I. *Ozone as a Cause.*—The first crude tests that were made led observers to suppose that in pure air ozone existed to the extent of about one part in ten thousand. As more careful and accurate observations were made, this supposed quantity gradually diminished; till finally, as a result of the experiments of that most careful observer, M. Houzeau, he has determined that "the air of the country contains, *at most*, about $\frac{1}{450000}$ of its weight, or $\frac{1}{700000}$ of its volume, of ozone." (*Am. Chemist*, Oct. 1873.) That his conclusion is correct, and that this minute amount is really the maximum, is further shown by the fact that such men as Dumas, Thenard, Berigny, Cloez, Fremy, and others, doubt, or even deny, the existence of ozone in the atmosphere; and that in 1865 an attempt was made in the French Academy to overthrow the belief in atmospheric ozone.

At the very commencement then we must admit the existence of a strong presumption against the efficacy of an agent when so dilute; unless, indeed, we emulate Hahnemann, with his limitless faith in the "medicinal aura" of his thirtieth dilution. (*Organon*, p. 226.)

The peculiar odour which is sometimes observed during thunder-storms, and which we now know to be due to ozone, was noticed by the ancients, and was by them compared to that of sulphur. But although this odour is frequently mentioned, as by Homer, Lucanus, Persius, Pliny, and others, I do not find that any significance was attached to it as a cause of disease.

How highly charged an atmosphere must be to produce bronchitis or catarrh has never been determined. Certain it is that a lecturer and his students may remain for hours, in a class-room where the odour is quite strong, without experiencing the least discomfort, or having the slightest symptom of disease. Bence Jones thinks that one part in two thousand is able to cause "dangerous engorgement of the lungs, and even smaller doses, long continued, cause bronchitis and pneumonia." (*Dublin Journ. Med. Sci.*, Feb. 1868.)

"We must confess that ozone in excess, as we produce it in the laboratory, induces certain symptoms of disease; but as yet, we know of no instance in which an excess sufficient to produce the same symptoms exists in nature. An air so charged with ozone as to produce these symptoms would require no chemical test to prove the presence of an injurious agent. It would be an irrespirable air, and it would affect, with varying intensity, all who breathed it." (Dr. Richardson, *Popular Science Rev.*, Jan. 1866.)

In the recent experiments of Mr. Dewar and Dr. McKendrick, reported to the Royal Society of Edinburgh, December 1, 1873, animals were allowed to remain in air, or oxygen, charged with about ten per cent. of ozone, till they perished. After death it was found that the blood throughout the system was venous, and that death by ozone was not due to irritation, but "resembled that caused by an atmosphere surcharged with carbonic acid." (*Nature*, Dec. 11, 1873.)

People living in the country are not more liable to epidemics of influenza and catarrh than those living in the town; while mountaineers, hunters, and sailors, though living almost constantly in a maximum of ozone, seem almost entirely exempt from these affections. Moreover, during the course of my experiments, I, on several occasions, remained all night in a small and close room, where ozone was being generated by the action of sulphuric acid upon permanganate of potassium, and though the odour was somewhat disagreeable, I experienced no further inconvenience, nor had I a single symptom of catarrh.

In truth, all *a priori* reasoning is most decidedly against the theory of the production of disease by atmospheric ozone, and the truth of this reasoning is shown by numerous observations, a few of which I will give.

Dr. Seitz, from observations made at Munich from 1853 to 1855, writes:—

"We found that months in which the ozone was abundant were not characterized by a predominance of catarrhal affections when compared with months in which less ozone was observed in the air. After days distinguished by a great excess of ozone we did not observe the occurrence of a greater number of cases of catarrh." (*Catarrh and Influenza*, 1865.)

From the observations of the Medical and Scientific Club of Königsburg, Prussia, conducted during 1856, the conclusion was reached that there was no connection to be discovered at any time between a malady and the amount of ozone in the air. According to Dr. Hayes, of the Arctic Expedition, in the polar regions where the ozone register is generally at 10 (the maximum), pulmonary and bronchial diseases are almost

unknown. Capt. Pope, of the U. S. Army, makes a similar statement in regard to the table-lands of Texas and Mexico.

Dr. Ireland, of Bengal, reports that on one occasion "a sudden *decrease* in ozone was followed by a threefold increase of patients in the hospital, and by the prevalence of rheumatism and *influenza*;" when there came an increase of ozone the patients recovered. (*Edinburgh Med. Journ.*, July, 1862.)

The dust-storms of India are most highly charged with ozone, yet Ireland reports: "There is no influenza after dust-storms in India." (*Edin. Med. Journ.*, July, 1862.) The most delicate tests always fail to detect ozone in the air of hospital wards; yet in the Massachusetts General Hospital, during the epidemic of influenza in 1832, "nearly all the patients in the hospital were affected." (*Flint's Practice*, p. 216.) Nor is this an isolated case; for these epidemics visit, with equal severity, the alley and avenue, the city and the country, the mountain top and the mine.

Faber, Wunderlich, T. Boeckel, Houzeau, and many other eminent observers do not believe in a causative influence of ozone upon bronchial affections or other diseases. The special cause of influenza is "independent of appreciable atmospheric changes." (Flint.) It is not due to "any recognizable physical changes in the surrounding air." (Da Costa.)

Mr. Fox, in his recent work on ozone (p. 158), thus concludes: "There is no evidence of any weight whatever in support of the views regarding an etiological connection between atmospheric ozone and certain diseases."

But I will not weary the reader with further quotations, which would be but tiresome repetitions of those already given.

The hypothesis, that a maximum of atmospheric ozone can cause disease, rendered exceedingly improbable by a knowledge of the minuteness of that maximum, and further weakened by the fact of the prevalence of these diseases in localities where, from its ready destructibility, we cannot imagine ozone to exist, has been, I think, completely demolished when put to the final test of observation, which has failed to establish or so much as render probable that ozone acts as even a *predisposing* cause of disease.

II. *Ozone as a Remedy.*—This can be dismissed very briefly. Ozone, artificially prepared, has been administered (?) in the form of the so-called "ozonized waters" and "ozonized oils," to which almost miraculous powers were *at first* attributed. The former, however, on careful analysis were found to contain no ozone.¹ In specimens examined by Boettger, a little nitrous acid was found (*Ph. Cent. Halle.*, 1871); by Kremer, a trace of the binoxide of hydrogen (*Ibid.*, 1872); by Behrens and Jacobsen, hypochlorous acid (*Scientific Am.*, Jan. 31, 1874); and by Ramelsberg, chlorine. (*Ibid.*)

¹ All chemists agree in saying that ozone is insoluble in water.

Dr. Thompson, of London, in a paper read before the Royal Medical and Chirurgical Society, Feb. 26, 1861, asserted that ozonized oils, when administered in phthisis, reduced remarkably the frequency of the pulse. The real value of this agent may be inferred from the fact that "ozonized oil," and "oxidized oil," and "rancid oil," are strictly synonymous terms. (Rand.) Hence we are not at all surprised to learn that, when the experiments of Thompson were extended and repeated more carefully, ozonized oil was found to possess no peculiar virtues. (*Edin. Med. Journ.*, July, 1861.)

Patients affected with phthisis are sometimes sent with benefit into the pine forests. The benefit in these cases has, by some, been attributed to the ozone *supposed* to be produced by the terebinthinate exhalations. Mr. Burgess, the inventor of the method of making paper from wood, found that the introduction, into his bleaching room, of a few drops of turpentine, would not only prevent any further formation of ozone, but would even destroy that already existing.

The benefit derived by consumptives from a residence in Minnesota and other Western States, has been attributed to the abundance of ozone in these localities. The burden of proof, however, lies with the theorists, and they have not yet furnished the demonstration. In truth, the elements involved, in producing the effects due to "change of climate," are too numerous and complex to permit us to select any particular one, as the main or only cause, and we do not want beneficial effects attributed to ozone unless the ozonometer is brought into play.

III. *Ozone as a Preventive.*—Ozone being found in the laboratory to possess deodorizing and disinfecting, or germicide, powers—of which my own experiments have assured me—was then, by inference, regarded as "nature's great disinfectant," which when present would destroy the floating germs of disease, and thus prevent or check an epidemic; while if it were absent the air would, in the words of a recent writer, "soon contain within itself the seeds of inevitable death," and "the wasting pestilence would stride on uncurbed."

This theory presupposes these germs to possess a greater degree of destructibility than is warranted by what we know, from the experiments of Wyman, Beale, and others, of other germs and ova floating in the air. The theory is, moreover, opposed by what is practically found necessary in order to accomplish complete disinfection. The *Oxford Disinfecting Minute* says: "No disinfection can be thorough if a man can live in a room whilst it is going on." J. M. Bryan thinks that "the only true disinfectants are those which produce an atmosphere or vapour in which neither we, nor any other life, can be sustained." (*Brit. Med. Journ.*, Dec. 13, 1873.) W. J. Cooper, in an essay before the Social Science Congress, says: "Before they could use enough iodine to have any effect upon germs it would produce the well-known iodine catarrh. Bromine

would overpower the senses, with its suffocating stench, long before it could disinfect; and, if the air were to be overcharged with ozone, it would be productive of equally deleterious consequences." (*Scientific American*, Nov. 22, 1873.)

The general statement may, I think, be safely made, that fungi and infusorial germs require for their destruction an atmosphere so charged with noxious vapour as to be highly deleterious to, if not irrespirable by, human beings, and that there is no proof whatever that the invisible germs of disease are more easily destroyed.

Ozone is usually ranked with disinfectants, although, according to the report of General O'Neal, it (as permanganate of potassium) seems to be rather a deodorizer than a disinfectant. (*Annual Rep. Army Med. Dep't.*, vol. xiii.)

The conclusion of the Analytical Sanitary Commission on Disinfectants was that it did not possess any great advantage over less expensive and more convenient agents. (*Lancet*, July 26, 1874.) Dr. H. Day speaks of it as inferior to chlorine and bromine, and in many instances, not so applicable as iodine. In my experiments with ozone I found fungi to remain unaffected, unless the air in the bell-glass became perfectly saturated, as indicated by the rapid discoloration and bleaching of the test-papers, when they perished. If, then, ozone is not superior to the other disinfectants, and if none of them is germicide unless in suffocative amount—or even if a degree of saturation much less than this is sufficient—we must admit that the probabilities are very strong against the germicide powers of ozone when so dilute as one part in 700,000; which, it must be remembered, is not even its *average*, but is its *maximum*, amount.

This small quantity is found to be speedily destroyed in the presence of any decomposing matter. Thus it is a common observation that ozone can scarcely ever be detected in compactly built portions of a city, except in cold weather, when no decomposition is going on, or in elevated situations, as church steeples, where a feeble reaction may sometimes be detected. In Philadelphia, at my residence on Thirteenth Street, I have tested for ozone in all kinds of weather; in the midst of fog, mist, rain, sleet, and snow; in hot weather and in cold; when the sky was clear, and when it was cloudy; but never—not even during a thunder-storm—have I been able to detect the slightest trace of ozone.¹ We have had all the "bracing and inspiring effect of clear, crisp, and sparkling mornings," but *no ozone*, notwithstanding the opposing theory of Dr. Beard. (*Popular Sci. Mo.*, Feb. 1874.) The general absence of ozone from cities is, indeed, a fact admitted by all observers. (As a specimen of the kind of logic, and of generalization, not infrequently indulged in by enthusiastic

¹ The tests used were prepared for me by an experienced chemist, and were the usual "starch-iodide" papers.

writers on ozone, I may quote the following, by one whose *observations* (?) were evidently made in the *country*: "The ozonoscope held before a half open door has a deep hue given to it. Every one knows the effect of such exposure, the ozonoscope defines the cause." (Dr. Royce, of Buffalo.) In country towns ozone may generally be detected, though I am informed by Prof. Kemp, of Illinois, that such is not the case where impure coal, containing sulphur, is used for fuel. But though ozone can be detected in the air outside of country houses,¹ it can seldom be found within; for so easily and quickly is this body destroyed that I have never been able to detect it in the living-rooms of well-ventilated country residences.

The general fact being then established that ozone does not exist in compactly built cities, two conclusions necessarily follow: 1. A continued local absence of ozone cannot beget epidemics, else an epidemic should have arisen in Philadelphia. 2. The presence of ozone is not necessary for the destruction of the germs of disease, and the consequent limitation of an epidemic; for these diseases enter a city, run their course, and depart, without the presence of ozone being at any time manifest. That these epidemics rarely visit the small towns and rural districts, must be accounted for by their isolation, rather than by attributing their exemption to any agency of ozone; for an epidemic, once introduced into a village, will not infrequently rage as fiercely and destructively as in the non-ozonized city. Numerous instances of this were furnished so lately as during the cholera epidemic of 1873.

Webster, in his work on *Epidemic and Pestilential Diseases*, 1799, after tabulating a vast number of epidemics, thus remarks: "It will not escape the most inattentive reader of the foregoing history, that all the violent and general plagues have been preceded or accompanied with remarkable phenomena in the physical world, as comets, earthquakes, explosions of volcanoes, and others of a subordinate kind." And another old writer says: "Mighty revolutions in the organism of the earth, of which we have creditable information, had preceded it. From China to the Atlantic, the foundations of the earth were shaken—throughout Asia and Europe the atmosphere was in commotion." (Hecker, *On the Black Death*.) Curiously enough, these very phenomena, although no longer regarded as associated in any way with the diseases in question, are, nevertheless, those which, by disturbing the electrical tension, are supposed to be instrumental in the production of ozone. Storms also produce ozone, yet Orton, in his work on *Cholera*, says it is an everyday occurrence in India for an epidemic to be ushered in by a storm. The same fact is noted by many other writers, but the following statement by MacCormack is especially pertinent: "The outbreak of cholera

¹ Mr. Smyth, who conducted his tests by means of an aspirator—the only true method—advances the assertion that the amount of ozone in the atmosphere of the country is almost absolutely constant. (*London Med. Times*, March 9, 1867.)

in the town of Sligo, where it raged with unparalleled severity, was preceded by a terrific storm of thunder and *lightning*, and this occurred also in several other districts throughout the country" (Ireland in 1832). (*Cholera*, 1853.)

The oxygen given off by vegetation, being in the form of ozone, forests have been regarded as largely instrumental in the production of this body in nature. Hence those living near, or in, forests should be specially free from the ravages of these diseases. That this is not true of the Indians of modern times, is well known; that it was not true of them formerly is shown by the fact that during the years 1617, '18, and '19, a fearful plague, whose nature is unknown, prevailed among the tribes of New England: "They died in heaps as they lay in their houses. In the place where many inhabited there hath been but one left alive to tell what became of the rest; the living being, it seems, not able to bury their dead. And the bones and skulls made such a spectacle that as I travelled in that forest near the Massachusetts, it seemed to me a new found Golgotha." (Norton, *New-England Canaan*, 1637.)

High hills generally, and elevated plateaus and mountains always, furnish abundant ozonic reaction, and should hence be free from these epidemics. "The plague in 542, and in subsequent periods of the fifty years plague of Evagrius, ascended to the tops of the hills and mountains. Hildanus informs us that in the plague of Lausanne, in 1613, the huts of the peasants on the hills and mountains were not exempt, though detached and having no intercourse with the infected." "The same fact is recorded of the plague of 1720, which extended to the villages and mountains of Provence." (Webster, *op. cit.*) The citadel of Bellary, on a barren hill 500 feet high, with no marshes near, has had "permanent and unrelaxed severity" of cholera since 1818. (Prof. Peters, *N. Y. Med. Journ.*, Aug. 1871.) Of the epidemic of 1854-5, Dr. Terry states: "In both Venetia and Lombardy, the country suffered more than the cities, and the principal routes of the disease were along the high lands." (*N. Y. Med. Journ.*, 1866.) In the epidemic of 1849-50, nearly all the cities upon the elevated plateau of Mexico were affected. (*Ibid.*) "Cholera arises on the *tops of mountains*, and in the bowels of the earth; in hot climates, and in *cold climates*; wherever, in fact, man is, there may this disease be found." (Da Costa.) Islands, being constantly surrounded by an atmosphere highly charged with ozone, should sustain entire immunity from this class of diseases. But I think statistics show clearly that the poison spreads as rapidly, and proves as virulent, here as on the main land, and that the relative frequency of visitation, among various groups of islands, depends entirely upon their degree of isolation. Cholera shows itself "upon *lofty mountains*, in the midst of sandy deserts, and among the scattered inhabitants of thinly peopled agricultural districts. It crosses mountains, deserts, and *oceans*." (*Wood's Practice*, vol.

1, p. 811.) In support of this statement may be mentioned the striking fact, which even Pettenkofer, though holding the "ground-origin" theory, was compelled to admit, that cholera has appeared occasionally on board ships at sea, under such circumstances that the occurrence could only be explained by supposing the germs to have been borne through the air from the far-distant land. (*Med. News and Library*, Oct. 1873.) Epidemics of *yellow fever* always originate in sea-port towns; and the specific poison of this disease "is sometimes generated in ships at sea." (*Flint's Practice*, p. 947.) Dr. Chauffard, of Paris, says of *typhus fever*, that on the high table-lands of Mexico, it is both endemic and frequent. (*Revue Scientifique*, 1873.)

If ozone can ever be detected in any part of a city, it will be in those parts which are most elevated, cleanest, and best ventilated; and these portions of a city should, according to the ozone theory, always be most free from disease; especially when contrasted with those portions which are low and filthy. That the higher portions of a city are exempt from these epidemics is, as a rule, true. A single exception, however, will prove fatal to the view that this immunity is due to ozone. "In the *Traité de la Peste*, p. 29, it is asserted that in the melancholy plague at Lyons, in 1628, the filthiest houses, the crowded places, narrow streets and confined apartments, were places of the most safety; while the most airy situations, as houses on hills, were most exposed to ravages of the disorder." "Malouin declares that the most populous and dirty places in Lyons and Marseilles were least affected with the plague." (Webster, *op. cit.*) In 1847, Constantinople was attacked by an epidemic of cholera. The upper portion, Bosphorus, clean, salubrious, and inhabited by wealthy families and retired merchants, escaped; while the lower portion, Stamboul, with its narrow streets and alleys, abounding in poverty and dirt, was devastated. But eighteen years afterward, clean Bosphorus was decimated, while filthy Stamboul escaped. According to Dr. Drake, the clean and dirty, and the high and low places of Cincinnati were alike affected in the epidemic of 1832. At Nashville, in the epidemic of 1849-50, it "singled out the very summit of College Hill for its onslaught;" and during the summer of 1873, "high places and low places were alike assailed." "It loved the high places and the clean places." (*Nashville Journ. Med. Surg.*, Aug. 1873.)

These examples, which I have selected from those met with here and there in my reading, show that neither the spread of a zymotic disease, nor its virulence, is influenced perceptibly in any way by the presence or absence of ozone. For we have epidemics attacking, with equal severity, the high and low, and the clean and filthy, portions of a city; spreading to the villages upon hills and mountains; depopulating the Indians in their native forests; decimating the inhabitants of sea-girt islands; and, finally, even originating, or breaking out, on board ships at sea. Moun-

tains and islands always furnish abundant ozonic reaction, while forests and seas are great manufactories of ozone.

But lest any should be so uncandid as to deny the conclusiveness of these facts, on the ground that no tests were actually made, and that therefore ozone *might have been absent* in these various cases, I have made "assurance doubly sure" by collecting instances where this proof is furnished. The properties of ozone being always the same, if it exists with, but does not destroy, the germs of disease to-day, it did not destroy them yesterday, and it will not destroy them on the morrow. Hence a single well-authenticated instance of the coexistence of ozone and cholera, for example, would be sufficient, logically, to refute the theorists. But I will be more generous; I will give more than one, and will then assure them that the line might almost stretch out indefinitely.

Prof. Peters, of Lexington, Ky., informs me that he made ozonic observations during the epidemic of cholera in 1851, and arrived at the conclusion that there was no proof of any relation between the two. During the epidemic at Munich, in 1854, Seitz found "no relation." "In August, with a large amount of ozone, this disease increased from day to day; whilst in September, with a small amount of ozone, it decreased." (*Catarrh and Influenza.*) Of the same epidemic Dr. E. Bœckel, of Strasburg, writes: "The minimum of ozone does not coincide with a maximum of cholera, and this last does not diminish as the ozone augments." (*De l'Ozone*, 1856.) During the epidemic at Turin, in 1867, Father Denza made observations a half mile from the town, and found that "during the days in August and September, when the cholera was at about its height, the amount of ozone present was variable, but considerable; perhaps about the average." (*Med. and Surg. Rep.*, May, 1868.) "Dr. Day, of Geelong, assures me that he suspended ozonoscopes around the houses of patients suffering from cholera in 1865, and noted an abundant reaction." (Fox, *op. cit.*, p. 131.) Dr. Macnamara, in his work on cholera, writes:—

"With regard to the supposed influence of certain states of the atmosphere, having reference to the amount of electricity and ozone it may contain, in the generation of cholera in the human body, all such ideas are purely hypothetical. We have no evidence at all in favour of such views."

"A number of pamphlets have appeared, regarding the supposed relationship between cholera and ozone; at Munich, by Pettenkofer; at Königsberg, by Schiefferdecker; at Vienna, Cracow, at Szegedin, in Hungary, at Senftenberg, in Bohemia, at Kremsmunster, etc. They are all unfavourable to the hypothesis that ozone descends below its summer minimum during an epidemic." (Fox, *op. cit.*, p. 135.)

Prof. Kemp, who made observations at Olivet, Mich., for three years, writes me: "I never could discover any relation between ozone and any special type of disease." Mr. Fox is my authority for the statement that during the epidemic in London, in 1854, Mr. Glaisher had ozonometric observations taken throughout the city, and was astonished to find that

where there had been no ozone, there had been no deaths from cholera; but that where ozone had manifested itself, there the cholera had been most active.

Andrews says :—

“It has been asserted, for example, as the result of observation, that an outbreak of cholera is accompanied by a marked diminution of atmospheric ozone; but this statement has been disproved by later and more trustworthy observations. On the whole, it may be safely asserted that no connection has yet been proved to exist between the amount of ozone in the atmosphere and the occurrence of epidemic or other forms of disease.” (*Nature*, March 12, 1874.)

My notes furnish many other similar results of observations on the relation between ozone and cholera, but those already given will suffice. As to other diseases, few observations of any kind whatever have been reported. At Nottingham, in 1848, E. J. Lowe observed ozone “to be in excess during months in which an epidemic of *smallpox* was most virulent.” (Fox.) Dr. Grimshaw found “no correspondence between the amount of ozone in the atmosphere and the prevalence of *typhus*.” (*Med. Surg. Rep.*, Aug. 11, 1866.) If ozone destroys *malaria*, as some have asserted, it seems a little curious that this miasm should exist in the country, where there is ozone, but should never enter the city, where there is no ozone. Prof. W. K. Kedzie, who made observations near Lansing, Michigan, for three years, in a decidedly malarious region, informs me that he never found ozone absent for more than two days at a time. “Ozone and malaria can coexist; of this my experiments have left no doubt.” (W. W. Ireland, *Edin. Med. Journ.*, July, 1858.) Mr. Fox states that ozone passed through a solution of the organic matter of marsh air, does not decompose it; and quotes from Burdel to the effect that he frequently found as much ozone over marshes as in other situations. (*Recher. sur les Fièvres Palud.* 1858.) And the same gentleman, after examining the subject very carefully, thus concludes: “There is no evidence to show that ozone destroys the marsh miasm, or is in any way related to malarious disease.” (*Op. cit.*, p. 147.)

In considering the relation of ozone to disease, I have endeavoured to devote to each division of the subject as much space, relatively, as its importance has seemed to demand. The remedial effects of ozone have attracted little attention and gained little credence. Comparatively few have advocated the theory of its acting as the exciting or predisposing cause of disease. But in the minds of many practitioners there exists an indefinite, half-formed idea that ozone destroys the specific poison of zymotic diseases; or, in other words, that the absence of ozone is the cause of the production or propagation of these diseases. Therefore I have devoted considerable space to the discussion of this part of the subject. The prevalence of this idea, and the extreme to which some have carried it, cannot be regarded, however, as proof of its truth. There exists in every mind a natural desire for some solution of the mysteries

connected with epidemics : plausible hypotheses have always been readily received by the public, which ever, as Bacon says, " loves better to believe than to examine;" and it is notorious that when once the mind has become impressed by a new and strange object, it takes pleasure in ascribing to it properties which it does not possess, and which are often absurd. To get a more exact and full expression of opinion on this subject, than I had been able to obtain by examining the various journals, I instituted a correspondence with a large number of scientific and professional gentlemen living in various parts of the country. As a result of this correspondence, I find that many of these gentlemen, especially those who have not made any observations, still hold the question *sub judice*; but that those who have tested the matter and have formed an opinion, with one exception only, hold that there is " no connection" between ozone and disease.

CONCLUSION.—When I commenced the study of this subject, I was biased in favour of the view that ozone could produce disease directly by its presence, and indirectly by its absence. But after a careful and candid investigation, I think this view entirely erroneous. Reasoning *a priori*, from the premises furnished by what I found known of ozone and of epidemics, did not result in a conclusion favourable to any such hypothesis; while a resort to recorded observations proved no more satisfactory. It is true that occasionally, in some circumscribed locality, the fluctuations of an epidemic have seemed to sustain a certain relationship to the fluctuations in the amount of ozone; but such an exception proves nothing. In truth, it would be strange if such a coincidence did not sometimes occur; for, by a well-known law, a parallelism must exist, now and then, between two independent and irregular curves.

In the relation of ozone to disease, that which accords perfectly with the known properties of ozone, which harmonizes with the results of all observations, and which at once challenges rational belief, seems to be simply this: *ozone influences the general health, only in so far as it purifies the air by destroying*—not the living germs of disease, but—*the products of decomposition*. Beyond this, all views concerning the action of ozone, as a cause, a remedy, or a preventive of disease, rest upon vague and unfounded hypotheses.

ART. VIII.—*On the Use of Chloral in Cases of Phthisis.* By FRANCIS L. HAYNES, M.D., of Philadelphia.

DR. WATERS and others having called the attention of the profession to the value of chloral in ameliorating the sufferings of consumptives, it is thought that a record of experience on this subject might not prove uninteresting.

I have given chloral with two indications—(1) in small doses to allay cough, and (2) to procure sleep, and thus relieve one of the most distressing symptoms of a peculiarly distressing malady.

1. In giving chloral to allay cough, I have perceived no beneficial result, and now never use it as an ingredient of "cough mixtures." In the following cases, the drug was given alone, in the dose of five grains dissolved in a teaspoonful of simple water, and repeated (except in the third case) four times in twenty-four hours. In all the cases, the amount of coughing was much more than was necessary to expel the secretions. In no instance was the patient informed of the purpose for which the chloral was exhibited.

CASE I.—Margaret M. (apex of left lung solidified) took chloral for thirteen days, during which time her cough became more troublesome. When the chloral was discontinued, no change ensued in the cough. During the period in which she used it, she thought she slept rather better than usual.

CASE II.—Sarah G. (confirmed phthisis) used chloral for sixteen days. It had no effect on her cough, but made her sleep somewhat better.

CASE III.—George C. (slight solidification of right apex) was ordered to take five grains of chloral just before arising, as his cough was especially troublesome in the morning. He used it for three days, and then discontinued it, as each dose caused nausea and vomiting. The cough became less severe, but it still continued to improve when the chloral had been stopped.

CASE IV.—Charles S. (incipient phthisis) used chloral for twelve days. No benefit resulted, nor was there any aggravation of the cough when the drug was discontinued. During its use he did not sleep better than usual.

CASE V.—David C. (cavities in both apices) used chloral for thirty days. The cough continued to grow worse. He thought he slept better while using the chloral.

CASE VI.—William S. (both apices solidified) used chloral for five days. There was no change in the cough for the first three days; during the remaining two it grew more troublesome.

2. But it is in removing the sleeplessness of the last stages of phthisis that we find the true province of chloral. In the earlier stages of a disease which is commonly of such long duration, I have not considered it advisable to teach the patient to rely upon any hypnotic, and hence have not prescribed chloral. The danger of producing chloralism is an additional reason against its persistent use.

When, however, the patient has become so prostrated as to be forced to

keep his bed; when he is unable to obtain natural sleep, passing his days and nights in coughing, it is the duty of the physician—all hope of prolonging life being lost—to alleviate his sufferings as much as possible; and he can accomplish this in no better way than by giving him each night a few hours of sleep. The following are instances of this application of chloral. In each case the disease was far advanced.

CASE I.—Thomas G. has slept scarcely any for months; his cough is especially troublesome at nights. *March 28.* Slept eight hours last night after receiving gr. xv chloral. *29th.* He received no chloral last night, and slept only about an hour; feels wretched this morning. While he continued under my observation (one week) the chloral was repeated nightly in the same quantity, with the effect of procuring from three to seven hours of refreshing sleep. Except during sleep, his cough was as troublesome as ever.

CASE II.—Charles S. came under my charge during the last two weeks of his life. Chloral in half-drachm doses, given at bedtime, invariably procured him from six to nine hours' sleep, and had not the slightest bad effect.

I have frequently given chloral with the hope of removing some of the slighter ailments so common in phthisis, such as the dull frontal or occipital headache, but never with success; when sleep passed away, the pain would still continue.

CASE III.—Catharine S., *March 29*, has been troubled with dull frontal pain all the afternoon and evening. Take gr. xv chloral. *30th.* Slept very much better than usual, but the headache remains. Whenever she awoke during the night, she felt it.

Occasionally chloral is rejected by the stomach; or, the morning after taking it, the patient feels heavy and stupid. With these exceptions, I have noticed no bad effects from its use.

After chloral has been administered for one or two weeks, its hypnotic action becomes less marked, and it is necessary to increase the dose. It has this disadvantage, however, in a much smaller degree than opium.

In marked cases of insomnia, chloral should be given in doses of thirty grains, repeated if necessary at intervals of two hours. The same effect will be produced by half this quantity, if in conjunction we give ten grains of sodium bicarbonate.

ART. IX.—*Case of Osteophytic Inflammation of the Right Radius: Resection; Preservation of a Useful Hand.* By B. J. D. IRWIN, M.D., Surgeon and Brevet Colonel U. S. Army. (With a wood-cut.)

WHILE on duty at Fort Riley, Kansas, I was called in consultation, July 25th, 1873, to see Mrs. H——, aged 27, born in New Orleans, a tall, well-developed physique, fair complexion, blue eyes, light-brown hair, and of nervous temperament.

History.—Until recently has been a professional actress—was married and gave birth to her first child during the thirteenth year of her age. Is free from constitutional taint, but has been a sufferer from oft-repeated attacks of articular rheumatism of an inflammatory character, for several years, resulting in considerable enlargement of the knee-joints; the functions of the right knee having become gradually and seriously impaired. About nine months ago had a violent and protracted attack of the malady; the knee and wrist-joints suffering the brunt of the disease, which, after some weeks, assumed a subacute or chronic type.

Some three months subsequently the character assumed by the disease, involving the right wrist, would indicate that at about that period symptoms of periosteal inflammation were manifest, and shortly thereafter the soft parts situated over the inner and dorsal aspect of the distal half of the radius suppurated, leaving a foul intractable ulcer, which has continued since then to enlarge and suppurate profusely.

The system appears to have interposed but feeble resistance to the destructive tendency of the disease, as, within the last few days, two gangrenous sloughs, each about an inch in diameter, have destroyed the tegumentary and muscular tissues in the line of the long axis of the radius.

During the progress of the disease the general health of the patient was seriously depressed, and the constant pain induced a resort to the excessive use of opiates, which caused considerable disturbance to the organs of digestion. Sleep was seldom obtained except by the aid of narcotics.

Upon making an examination, I perceived at a glance that the disease had involved the osseous structures and that necrosis had taken place, which conditions were verified on introducing a probe to the bottom of the ulcer. The patient stated that hitherto no exploration had been made, and that she was then *en route* to an eastern city for the purpose of having the arm amputated, in accordance with the advice of her former medical attendant. The result of my examination convinced me that such an extreme measure was unnecessary; and as the woman was naturally very anxious to save the hand if possible, I advised resection of such portions of diseased bone as might be found involved, as a means to meet the desirable result, believing that the ulna and the contracted cicatrix would ultimately form a good support for the hand.

Having been requested by the attending surgeon to perform the necessary operation, directions were given to prepare the patient by a few days' rest, aided by a generous diet and a moderate amount of wine; and to facilitate the separation of the sloughs, charcoal and yeast epithems were applied twice a day.

July 31, 11 o'clock A. M. Having satisfied myself that the heart was free from organic disease, anæsthesia was readily induced by the administration of a mixture of equal volumes, in measure, of sulphuric ether and chloroform. I then made an incision about five inches long, extending through the diseased tissues down to the bone, from the proximal end of the scaphoid bone to a point about five inches on the inner aspect of the radial bone of the forearm. Upon carrying the finger to the bottom of the incision, from three to four inches of the radius were found denuded of periosteum, and the substance of the bone enlarged by osteitis and osteophytic deposits. By using the handle of the scalpel and the finger, the soft parts were carefully pushed aside and protected from injury by a pair of metallic retractors. The curved end of one of the retractors having been passed under and round it, the bone was divided about a line or two above

the diseased part by the convex edge of a Hey's saw, and by manipulating the free end as a lever, it was easily detached from its articulation. The ulna and carpal bones were found free from disease. By this procedure the division or injury of vessels or tendons was avoided. I was assisted in the operation by her attending physician, Dr. T. G. Horn, and also by Dr. Jones, of Junction City, the former of whom was assiduous in his attentions and efforts to consummate the object of the operation. The upper portion of the wound was reunited by silver sutures, and the granulated surfaces approximated by means of adhesive strips passed from behind and made to decussate over the line of the incision. The wound was then dressed with carbolized glycerine and the limb supported on a suitable splint. Potassium bromide was ordered as a substitute for the narcotics hitherto in use. Beef essence, poached eggs, milk and light wine ordered as diet.

August 1, 12 M. Patient passed a comfortable night; did not sleep much, but feels tranquil and much relieved in having passed through the trying ordeal, the fear of which had caused severe mental anxiety prior to the operation.

Wound looks well. Where it was practicable to use the sutures, union has taken place. A slight erythematous blush extends half way up to the forearm. Removed sutures; ordered a small piece of ice applied on the outside of the dressing, and continued previous treatment.

2d. Feels much better, having enjoyed a fair amount of sleep. The erythema has disappeared; pulse 90.

3d. Continued improvement. Wound granulating nicely. Tendency to diarrhoea during the night, owing, doubtless, to the ill-effects of the effluvia from the wound, which, despite the carbolized dressing applied morning and evening, rapidly became very offensive, owing to the high atmospheric temperature—85° to 95° F.

4th. Is better; bowels regular. Wound looks favourable. Continue treatment.

5th. Continued improvement. Has a return of her former appetite, and relishes her food.

6th. Does not feel quite so well to-day. Through the misconception of her attendant, the patient has had potassium bromide administered to her at frequent intervals, so that she took one ounce of the remedy since I saw her yesterday. The amount ordered was fifteen grains at bedtime, to be repeated twice during the night, if necessary. The quantity given has produced an extreme degree of lassitude and weariness of the whole body. The patient appears haggard and fatigued, the mouth is dry and the pulse 100, but without any marked increase of the normal temperature. Wound granulating rapidly and looking healthy. Some slight tumefaction on the back of the hand; a piece of ice was ordered kept on the outside of the dressing. Ordered egg-nog and milk-punch in addition to other remedies and extract of conium or hyoscyamus as a substitute for potassium bromide. Her brother, a physician, came to visit and remain with her yesterday, and promises to watch the case carefully hereafter, she having missed certain minor attentions which are not ordinarily obtainable in a hotel or boarding house.

7th. Condition much better. The conium induced a night of refreshing sleep, the best, she says, that she has enjoyed in six months. Tumefaction disappeared from dorsum of hand. Wound discharging freely and granulations looking healthy. Appetite better; pulse 96.

9th. Continued improvement. Put on citrate of iron and quinia and aromatic extract of cinchona.

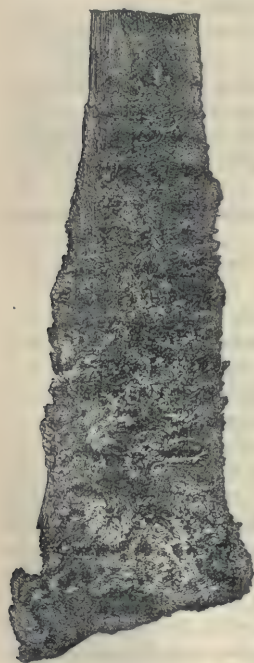
12th. Patient is able to sit up in bed and hold the disabled arm with the other hand. The wound continues to granulate satisfactorily, and all traces of the old sloughs have disappeared. Appetite good; sleeps well, and is cheerful. Ordered a bandage of mosquito netting applied, so as to crowd the tissue during the formation of the cicatrix.

20th. Has continued to improve. Wound nearly healed. A small superficial slough formed and separated four days ago. The felt splint, applied to support the arm while suspended in a sling around the patient's neck, has become limp and soft by moisture, allowing the hand to tilt too much to the radial side, causing the ulna to partially slip from its carpal articulation. To remedy this defect the hand was again placed on a light flat splint supported by a handkerchief bandage. The wound continues to diminish, and the patient is now able to get about the house and sit in the open air.

25th. Is almost well, and anxious to return to her family, in the southern portion of the State. The wound has almost completely healed, and the prospects are that the hand in time will be a very useful one and free from any deformity.

As she is now able to be about, her brother returned to his home some days ago, and at my visit on the 30th, I found that she had followed his example, but, in the hurry and anxiety to reach the home circle, had forgotten to discharge even the claims of gratitude to her medical benefactor.

The wood-cut showing the condition and extent of bone removed, is taken from a photograph of the specimen, deposited in the Army Medical Museum.



In excision of the wrist-joint the extremity of the *radius* was excised as early as 1758 by Cooper of Bungay, and subsequently by Moreau in 1794. (Ashhurst's *Principles and Practice of Surgery*, 1871, page 602) But the removal of any considerable portion of the distal end of the shaft of the bone does not appear to have been recorded prior to the early part of the sixth decade of the current century. The removal of the articular surface or extreme distal extremity of the bones of the forearm, necessary in excision of the wrist-joint, as performed by Cooper and subsequent operators, leaving a sufficient or suitable base upon which to coapt and sup-

port the carpal bones, is a measure of almost a totally different character in extent and magnitude. In 1853, Dr. Compton, of New Orleans, *resected* the bone of the forearm, removing both bones "with the exception of the *inferior* extremity of the radius;" and Erichsen, of London,

states that he *resected* the *whole* radius "with the exception of its articular head, which was sound," but I am unable to give the date of his operation, as it is not alluded to in the copy of Erichsen's work before me. The *entire* *exsection* of the radius in 1854 by Dr. Carnochan, of New York, demonstrated the feasibility of preserving a useful hand after the removal of the principal supporting base thereof; and, as a sequence to the experience gained by his major operation, we find that, in 1857, the same surgeon excised, "the *lower* four-fifths of the bone" from a female patient, aged 31, who made an excellent recovery, the functions of the hand—the left—being so little impaired that she was able to perform her household duties nearly as well as before the operation. (Vide *American Journal of Medical Sciences*, vol. xxxvi. p. 89, *et seq.*)

Professor Gross, of Philadelphia, excised "somewhat more than the *upper* third of the bone" in 1857, and in 1859 Prof. Choppin, of New Orleans, "resected all *but the inferior* articular extremity of the bone." I have seen it stated that West, of Birmingham, resected a considerable part of the distal extremity of the radius with success, but I am unable to state the exact time and character of his particular operation.

While the whole of the ulna has been removed, with successful results, by Carnochan, Jones, and Williams, and segments thereof, more or less extensive or important, according to the situation and nature of the operation performed, by several other American and European surgeons, I am unable to discover that any extensive portion of the *lower* extremity of the *radius*, beyond that immediately engaged in the formation of the wrist-joint or in close proximity thereto, had been removed prior to the operation of Dr. Carnochan in 1854, and, although extensive portions of the *upper* part of the bone have been removed in several instances, the *exsection* of any extensive part of the *lower extremity* of the *radius* does not appear to have been performed except in the instances already mentioned.

Since the foregoing was written, I have learned from Dr. Horn that he had seen the patient in February last, at which time she was able to flex and extend the fingers of the hand separately and pronate the arm. Her health he describes as excellent, and states that she used a broom in sweeping the floor to show how well she could use the limb. The wound made by the operation had cicatrized satisfactorily, but the disease manifests some disposition to reappear in the carpus. After her hurried flight, he says, she was allowed to follow the bent of her wayward disposition, and the carpo-ulnar articulation had not been properly maintained in position.

U. S. MILITARY ACADEMY, WEST POINT. NEW YORK, May, 1874.

ART. X.—*Case of Dactylitis Syphilitica¹ in a Child 18 months old.*

By SAMUEL C. BUSEY, M.D., Physician in Charge of Diseases of Children at the Columbia Hospital Dispensary, and one of the Physicians to the Children's Hospital, Washington, D. C. (With a wood-cut.)

SYPHILITIC lesions of the osseous system in young children, though comparatively rare, are just now attracting so much attention that I am induced to record the following case:—

F. M. H., white female, aged 1 year and 6 months, was admitted to the Children's Hospital Dispensary March 10th, 1874.

The following history of the case has been furnished by medical student H. A. Dobson, under whose care the child had been for some months:—

"The grandparents, it was stated, were healthy, so far as is known; mother's father still alive, age sixty; mother died at age of thirty-five of apoplexy; one brother died at eight years, disease unknown; one sister died at age of eight or ten, of diphtheria; one brother alive and healthy; one sister alive, said to have been troubled occasionally with scrofulous swellings (indefinite). The mother of child is now twenty-four years of age; menstruated at the age of fifteen; has been regular since; about ninth year had 'chills,' lasting about three months; never healthy since, though never sick enough to keep her bed. About the age of fifteen had a scaly eruption, accompanied with great pruritus, on head and forehead, extending thence to body. Was under treatment for a long time; always worse in winter than summer. Previous to the appearance of eruption was living in a hotel as chambermaid, and continued up to about two years before eruption. She made up beds of men who, it was said, were afflicted with 'bad disease,' and sometimes assisted in washing bed-clothing. Slept with the other servant girls, one of whom was afterwards suspected as being 'bad.' Married at twenty-one; husband died two years and seven months after of phthisis; suffered with throat for some time before being taken down. Child born twenty months after marriage, fat and healthy, weighing nine pounds, at full term; continued healthy until three months old, when eruption appeared on head; eruption 'scabby with matter,' and soon formed one scab. Began to waste in flesh at this time. Cough commenced at age of six months; continued severe for several months, and recurs now at times. Had severe bronchial affection. At about tenth month had a 'black diarrhœa,' which was very foul-smelling. This brings the case up to August, 1873; child then aged eleven months.

"In August, 1873, she came under my care, being very feeble, emaciated, weighing but fourteen pounds, with a dark diarrhœa, which soon changed to a thin rice-water discharge, with occasional colour of blood, which may have come from straining, as there was considerable prolapsus ani. Stools very offensive, odour permeating clothing and everything in contact with her. She had been treated with syrup of iodide of iron with cod-liver oil. She had considerable

¹ To avoid any further reference to various discussions of this subject, I give the following references: Dactylitis Syphilitica, Fox on Skin Diseases, p. 297; American Journal of Syphilography and Dermatology, Jan. 1871, article by Dr. Taylor; also, Case of, by Wigglesworth, same Journal for April, 1872: a Case of Congenital Dactylitis Syphilitica, same, Jan. 1872, p. 33; Syphilitic Lesions of the Osseous System in Infants and Young Children, by Taylor, American Journal of Obstetrics, May, 1874; Dactylitis Syphilitica, by same, No. 4, Archives of Scientific and Practical Medicine; Grunhut on Hereditary Bone-Syphilis in Children, American Journal of Obstetrics, vol. v. p. 405; Dr. Taylor's article, American Journal of Obstetrics, vol. vii. p. 53, will richly repay a careful examination.

fever, refused food, and had been fed on crackers, bread, potatoes, meat, etc. Extensive bronchitis; the bronchial râles could be heard at a distance of several feet. I placed her on a diet of pure cow's milk, from one cow. Prescribed a teaspoonful of cod-liver oil with lacto-phosphate of lime (Trinder's), three times daily. Gave also a tonic of bark and iron, elixir Peruvian bark with protoxide of iron (Nichols'), half teaspoonful twice daily.

"In two weeks there was slight improvement. Milk had to be forced down the child, but at the end of this time she drank it freely. She continued to mend slowly. The diarrhœa began to lose its foul smell; the bronchial râles began to disappear; teeth began to make their appearance; but not for three months did she seem to gain in flesh. About the last of October the diarrhœa ceased, and she gained rapidly, so that in the last of November she weighed twenty-two pounds, a gain of eight. Since then she has been quite well, with the exception of the bronchial difficulty, which still continues.

"On the 7th inst. a swelling was observed on the metacarpo-phalangeal articulation of the middle finger. The swelling was white and shiny, with a subcutaneous purple tint. It extended toward the carpus on the dorsal aspect of the hand, more than toward the digital extremity. A simple poultice was applied, and as swelling seemed to cause pain, acetate of lead and laudanum as a lotion was applied. On the third day a little tincture of iodine was applied as a counter-irritant, when the swelling on the dorsal aspect of the hand subsided somewhat, but increased on the palmar surface and toward the digital extremity. It was then discontinued. A close examination showed no fluctuation, and, suspecting that the affection was something of a more serious character than was at first supposed, if not syphilitic, the case was sent to the Children's Hospital, and is now under care of Dr. Busey.

"Mrs. H. has been for some time under treatment for the eruption upon her body, which was scaly, and in one spot seemed to be vesicular, as stains appeared upon her clothing. She is improving under the treatment, which is simply: syrup iodide of iron, fifteen minims, three times daily."

At the time of admission the child was fat and fairly nourished, but flesh was flabby, skin white and colourless, had twelve teeth, eight incisors and four anterior molars. Anterior fontanelle was open, but diminished. The tumour, which involved the first phalanx of the middle finger of the left hand, measured two and a half inches in circumference at its largest part near the metacarpo-phalangeal joint, gradually diminished tapering toward the digital end, but not implicating the second phalangeal joint. The corresponding finger measured one inch. The dorsal surface of the first phalanx was of slightly pinkish colour, deepening with a purplish hue on the radial and palmar surfaces; skin shining, tense, with entire effacement of the cutaneous rugæ; apparently painless. The child cries when the finger is handled and firmly pressed; uses the hand but avoids closing that finger upon anything. The forefinger widely separated. The discoloration of the surface was in a measure due to the iodine stains. To the touch the sensation was that of a firm, hard substance, conveying to my mind the idea of bony enlargement. Near the outer canthus of the left eye, immediately anterior to the left ear and on the left cheek were patches of a scaly, colourless eruption. Ordered the mixed treatment, according to Dr. Taylor's formula, as follows: R.—Hydrarg. bichlor. gr. j; potass. iodidi, ʒij; tr. gentian. co., syr. simp., āā ʒij.—M. S.—Five drops three times a day.

March 21. Tumour enlarged upon the radial side of finger, the skin covering the enlargement deep red, no evidence of pointing, but soft and indistinct fluctuation. Incised the abscess, discharged freely sanious pus. Continued the above recipe and flaxseed poultice to opened abscess.

April 1. Abscess entirely well, slight soreness of the integument only marking its former locality. No pain or tenderness; measurement of the

phalanx not lessened; shape and form same; motion of the second joint seems perfect, and the motion of the metacarpo-phalangeal joint apparently only affected by the enlargement of the phalanx; not sensitive to firm pressure.

The following wood-cut, from a paraffine cast by Mr. Dobson, taken after the cure of the abscess, furnishes a very correct view of the palmar surface of the diseased hand.



The mixed treatment with Dr. Taylor's formula was continued in ten drop doses with but slight diminution in the circumference of the tumour until April 21, when to this was added the local application to the diseased phalanx of the oleate of mercury (ten per cent). Subsequently the improvement was marked, and on May 11, when I last saw the patient, the largest circumference measured one and seven-eighths inches.

The literature of the subject is so recent that it would be presumptuous in me to attempt any review, but as the paucity of the recorded cases must undoubtedly be attributed to the failure to recognize the true nature of the lesion in consequence of the difficulty and uncertainty of tracing the syphilitic contamination, I may be pardoned for calling attention to a single point in this case, involving the question of diagnosis. Where the osseous lesion is marked and the syphilitic contamination readily traced by the coexistence of any one of the syphilides distinctly recognized in the child, or the history of syphilis undoubted in either parents, there is no

difficulty in making a positive diagnosis, but, as in the case reported, where these conditions are not positively made out, and where there are other concomitant data pointing to the scrofulous diathesis, a doubtful diagnosis necessarily mars the symmetry of the case. Doubtless the syphilitic diseases of infancy are more frequently confounded with scrofulous affections than any two distinct classes of diseases, and hence has grown the not unprevalent opinion, first perhaps promulgated by Lugol, that syphilis bears a genetic relationship to struma. In this case the satisfactory progress of the anti-syphilitic treatment adds strong confirmation of the correctness of the diagnosis.

ART. XI.—*Case of Retinal Separation in the Right Eye and Amaurosis Uræmica in the Left, occurring simultaneously.* By ALBERT G. HEYL, M.D., of Philadelphia.

THE following case, although coming under my notice so long after its inception, is still worthy of record, not only on account of its rarity, but also from its illustrating the part played by chronic renal disease in the production of retinal separation and certain amaurotic conditions.

Mrs. E. B., aged 45, married, presented herself on the 2d of June last, at the dispensary N. E. corner of Eighth and Locust, with the following history. She has always been remarkably healthy, never having been confined to bed with sickness, except, when a child, with scarlatina. She has, however, at times suffered from what appear to have been attacks of cerebral congestion; this condition when occurring at the menstrual period has always been relieved by the discharge. During a severe attack of this kind, marked by violent headache, confusion of mind, tendency to vomit, a violent thunder storm, by which she was very much frightened, arose; while sitting in a neighbour's house, whither she had fled for refuge, with her face bowed upon her hands, she suddenly discovered, in momentarily uncovering her eyes, that she was totally blind. Extremely agitated, she was induced by her friends to recline upon a lounge, and soon fell into a doze lasting about an hour; on awakening vision had partly returned in the left eye, and in another hour was completely restored. But in the right eye no change in vision from the time of accident until the present has occurred.

The patient is a short, stout, thickly-set person, with a constantly flushed face; otherwise presenting nothing noticeable; answering questions quickly and intelligently; no evidence of anything like paralysis having existed. Heart sounds normal; no albumen in the urine at the time of examination, but microscopic examination showed the presence of granular casts indicative of chronic renal disease.

On inspection the eyes seemed in every respect to be normal; movements of eyeballs perfect. Irides of a gray-blue colour, dilated each to the extent of two millimetres. Further examination showed the following:—

R. E.—Able to count fingers, held downward and outward at a distance of two and a half feet. Visual field defective except in the portion corresponding to the upper inner portion of the retina. Tension of the ball decreased. Oblique illumination showed a slight cloudy reflex from the vitreous body, and two round blood clots, partially decolorized; they were posterior to the inner lower edge of the lens, lying upon and doubtless proceeding from the corpus ciliare.

Ophthalmoscopic examination showed cloudiness of the vitreous body, floating opacities and a sheet of separated retina like a mass of rugged ice floating hither and thither as the ball was moved.

Upon the surface of the separated retina could with difficulty be detected a number of anastomosing thread-like lines which proved to be degenerated retinal vessels.

L. E.—Vision = $\frac{20}{20}$. Reads Jaeger 7 at about eight inches, but only able to read for a few moments at a time, owing to an irritable condition of the retina. Visual field normal. Tension normal. Refraction emmetropic. Oblique illumination showed nothing abnormal. Ophthalmoscope revealed great sensitiveness to light; media were clear; retinal veins full and somewhat tortuous; the arteries in comparison appeared small. Optic disk and retina somewhat clouded. Rim of the disk not quite so sharply defined as in the normal condition, but still clearly distinguishable.

Such was the history, such the ophthalmoscopic appearances two years after the accident, and in order to obtain a clear but comprehensive understanding of both, let us examine the condition of each eye somewhat in detail.

R. E.—In this eye during what would seem like an attack of cerebral congestion, there was the occurrence of continuous, almost total blindness, and on examination two years subsequently, the morbid changes already named. Of course the retinal separation at once accounted for the ocular disease, and the only difficult thing to understand, is the method by which this was accomplished, and this difficulty is much enhanced from the length of time which elapsed between the accident and her application to the dispensary.

However, we may consider the cause of the retinal separation to have been either an extravasation of blood or an exudation of serum.

1. An extravasation of blood—a hyperæmia of the intra-ocular vessels, consequent on the turgid condition of the cerebral veins and sinuses, produced a tension of the vessels greater than they could bear, and the blood poured forth soon separated the delicate connective tissue between choroid and retina. This view is countenanced somewhat by the existence of the blood-clots observed on the corpus ciliare, which, although much more recent than the accident, still point to a condition favourable to intra-ocular hemorrhage, and further, the existence of chronic renal disorder, so often productive of vessel-degeneration and consequent fragility of the vessel-coats, would add to the weight of this supposition. Retinal separation from extravasation of blood is, however, a very rare condition, so much so that some authorities have doubted its occurrence. Stellwag¹ believes that in some instances it does occur. Bowman² says on this point, "I have no doubt whatever that effusion of blood into the choroido-retinal space sometimes occurs in consequence of a previous diminution of eye tension."

¹ Lehrbuch der Augenheilkunde, s. 218, Wien, 1870.

² London Ophthalmic Hospital Reports, vol. iv. p. 134.

Von Graefe¹ mentions the case of a patient in whom the hemorrhagic diathesis existed, and who, after repeated attacks of hemorrhage into the skin and from the kidneys, was suddenly seized with total loss of vision in each eye; on examination retinal separation in each eye was found, doubtless dependent upon extravasation of blood. I have in addition the notes of a case in which a large blood extravasation with consequent retinal separation occurred from a missile from an air-gun impinging upon the eyeball.

2. An exudation of serum might have produced the separation; and this idea in turn receives confirmation from the fact of the existence of chronic renal disease, so often accompanied by blood changes favourable to serous effusion. There is, however, one difficulty with both of these suppositions, which is somewhat difficult to meet, viz.: How is it possible, in a perfectly normal ball with normal tension, for an effusion, sanguineous or serous, to force asunder retina and choroid? Or, given, two normal eyeballs exposed to an influence equally powerful as we suppose it to have been in the present instance, how is it that, in one we have a temporary blindness produced, in the other an irremediable pathological condition? The only way out of this difficulty would seem to be the supposition, that previous to the accident the right vitreous was fluid and partially absorbed, and thus the way opened for a retinal separation, which would take place provided the proper motive power were furnished.

Let us now briefly consider the temporary amaurotic condition of the left eye. In this eye, it may be remembered, with pre-existing head symptoms occurred sudden total loss of vision, with gradual but perfect return in the space of two hours. On examination of the eye two years subsequent to the accident, nothing abnormal was noted except a hyperæmic and irritable retina. Taking into consideration the pre-existing head symptoms coupled with chronic renal disease, we may without much hesitation refer this case to that class which bears the name of amaurosis uræmica. The same blood changes and the very possible hyperæmia existing in the right eye were also common to the left; owing, however, to a sounder condition of the vessels, and to a more incompressible vitreous, a sudden serous transudation was poured out, which so compressed the retinal capillaries as to produce a temporary anæmia of the retina and the consequent temporary abrogation of function; it may be considered by some that this process was intracranial and not intraocular, but the pathological conditions of the right eye must strongly incline us to the latter views; after a short time, the mental agitation having subsided and absorption of the serum taking place, the capillary circulation was restored, molecular changes renewed, and the function of vision gradually but surely re-established.

Thus it would seem that this case of temporary amaurosis is referable not to a transitory embolism, as in Mauthner's case reported in the July number of this Journal, nor to lack of power in the blood to properly nourish and vitalize the tissues, but simply to the anæmia of the retina

¹ Archiv für Ophthalmologie, I. B. I. abth. s. 370.

dependent upon the mechanical pressure of a serous fluid; in a word, the views of Traube¹ with regard to the head symptoms in uræmia as being dependent upon acute anæmia of the brain, caused by œdema of the brain tissue, are considered to be applicable to the retina in this case. Rosenstein,² who accepts Traube's views as being applicable to most cases of uræmia, considers the pure uræmic amaurosis with negative ophthalmoscopic conditions as a certain but very rare occurrence.

Hirschberg³ observed a case which he hardly considered as due to a uræmic condition, but which doubtless ought to be ascribed to it, and which in this connection may be quoted: the patient, a full-grown man, after suffering with headache for two days, was suddenly seized with double complete blindness. Besides great weakness and slowness of intellect nothing abnormal was observed. Absolute amaurosis was present except feeble remains of light sensibility; pupil moderately dilated; its reaction slow; under appropriate treatment complete restoration took place on the following day. This case, although having distinctive features, yet bears sufficient likeness to the one described in this paper, to enable us to link them together as examples of the uræmic amaurosis.

One word with reference to the management of this patient: the eye trouble in this case is but an effect of a general disorder, and the intra-ocular lesions, serious as they may be in regard to the usefulness of the patient, are trivial compared to cerebral changes, very possibly fatal to life, which might occur. Such a patient, therefore, ought never to be entirely free from medical supervision; proper hygienic regulations should be enforced; the condition of the kidneys as far as possible ameliorated, and the morbid changes dependent on the renal disease combated.

1537 PINE STREET, PHILADELPHIA.

ART. XII.—*Case of Habitual and Excessive Constipation; Eight Months and Sixteen Days between Fecal Evacuations.* By THOMAS D. STRONG, M.D., of Westfield, N. Y.

M. B., now residing in Sheridan, Chautauqua Co., N. Y., æt. 26, height 5 feet 10 inches; unloaded weight 125; skin pale, and has a waxy look; tongue clean and pale; has been habitually constipated from childhood.

The first medical history of him, which I have obtained, is by Dr. Geo. S. Harrison, of Sinclearville, who attended Brooks when two years old for costiveness. His habit then was to go about two weeks without fecal evacuation.

¹ Vide Niemeyer's Practice, vol. ii. page 32.

² Pathologie ü. Therapie der Nieren Krankheiten, 2te Auflage, p. 153.

³ Jahres Bericht der Ophthalmologie, i. p. 368.

Several years later he attended him for diphtheria, and the time was then extended to six weeks. Dr. H. has occasionally seen him, and watched the case to this time, and says the disease has been gradually and steadily increasing.

For the past six years he has been under my observation, and several times been before our Medical Society, where careful measurements and examinations have been made. Most of the medical men of this county know more or less of the case.

In May, 1872, I took the following measurements of him naked:—

Girth—Chest above nipple	. . . . .	34½ inches.
“ at umbilicus	. . . . .	36 “
“ 2 inches above umbilicus	. . . . .	37 “
“ 3 “ “ “	. . . . .	39 “
“ 4 “ “ “	. . . . .	39½ “
“ 6 “ “ “	. . . . .	39 “
“ at lower end of sternum	. . . . .	38 “

Apex beat of heart one inch above nipple, and one and a half inch inside.

March 18, 1874, I took the following notes:—

Four weeks since he had a partial evacuation. Five months before had a complete evacuation.

Girth at umbilicus	. . . . .	37½ inches.
“ 4 inches above umbilicus	. . . . .	38½ “
“ 6 “ “ “	. . . . .	38½ “
“ at epigastrium	. . . . .	38 “
“ at nipple	. . . . .	36½ “

Dr. G. B. Bishop, of Silver Creek, who is now B's medical adviser, wrote me May, 7, 1874: “His bowels have moved a little several times since you saw him at my house March 14.”

Once or twice a year he has an attack of vomiting, attended with violent pain in stomach and bowels. In 1872 he had such an attack, which was controlled by hypodermic injection of morphia; and, again, in 1873, the same occurred, and bowels were completely evacuated.

The process of defecation lasts two to four days, at which time he is sick, and becomes much exhausted.

The dejections look like brown paper chewed (paper wads of schoolboy days).

There is free escape of gas per anum.

The weight of fecal matter at one defecation was approximately obtained. He was accidentally weighed just before the movement, and again as soon as he could get to the scales. The difference was forty pounds.

The longest interval between any fecal discharges occurred four years since, and was *eight months and sixteen days*.

He is a labourer, and does considerable light work on a farm. His abdomen, when loaded, is hard; the diaphragm crowded high in the chest; the colon immensely distended, and traceable like a huge sausage.

He has been under the care of many physicians of all kinds, both intelligent and otherwise, and every imaginable treatment, followed by no permanent benefit.

P. S. Since writing the above report, Dr. Bishop writes me that he has pursued a course agreed upon by us last spring, and has given to B. the elix. cinchona, iron, and strychnia, with occasional small doses

of calomel. The result has been evacuations at short intervals, so that he has diminished in size materially, and his general health is improved. His girth, June 1, was at superior spinous process, 35 inches; at umbilicus, 35 inches; at epigastrium, 35 inches; apex beat of heart natural.

[Numerous cases are on record of very long-continued constipation, but the one above reported by Dr. Strong is, we believe, with a single exception, to be presently noted, the longest well-authenticated one hitherto recorded. Many such cases will be found related in the different medical cyclopædias, dictionaries, and journals, but we will refer merely to a few of the most remarkable.

Dr. Franklin Bache relates (*North Am. Med. and Surg. Journ.*, vol. vi., p. 262) a case which continued for seventy-six days, and afterwards recovered. Dr. Baillie records (*Trans. of a Society for the Promotion of Medical and Chirurg. Knowledge*, vol. ii., p. 174) one which was prolonged for fifteen weeks. Staniland (*Lond. Med. Gaz.*, vol. xi., p. 245, and *Am. Journ. Med. Sci.*, May, 1833, p. 232) another for seven months. Several cases are related by Dr. John Crampton (*Dublin Hospital Reports*, vol. iv., p. 303, and *Am. Journ. Med. Sci.*, November, 1827, p. 194) in which constipation continued for very long periods; in one case it had persisted for eight months at the date of publication, how much longer it continued we are unable to ascertain. An instance is related by Dr. L. Valentin, of Nancy (*Bull. des Sciences Méd.*, t. x., p. 74, and *Observ. des Sci. Méd.*, May, 1825, Marseille), in which constipation continued for nine months.—EDITOR.]

ART. XIII.—*Two Cases of Bi-lateral Lithotomy.* Reported by WM. MAY, M.D., of Washington, D. C.

CASE I.—H. B., aged 35 years. For the past four years has been suffering from vesical trouble; is now extremely emaciated, weighing but 104 pounds. For the last four or five months has not been able to leave his room, and for many weeks past has been confined almost entirely to his bed. Has nearly constant desire to pass water and very great suffering in voiding it. In fact the pain is so great that his physician keeps him nearly all the time under the influence of opium. Urine extremely offensive, and loaded with a most abundant muco-purulent deposit. From the appearance of pus in the urine and its great fetidity, and the extreme emaciation, fears were entertained of ulceration of the bladder. In short, symptoms are all of the most unfavourable nature.

On the 16th of January, 1873, my father, Dr. John Frederick May, of Washington, was requested to visit him by his attending physician, Dr. Jos. Borrows. He had been previously seen in consultation with Dr. Borrows by Dr. Bulkely, who had detected a calculus. On sounding him Dr. May confirmed its existence, but finding his condition for an operation so unfavourable he endeavoured to improve it preparatory to cutting him. After a trial, however, of two weeks, with but little gained, it was decided to give him the only chance left for his recovery, and accordingly, on the 1st of

February, Dr. M. operated on him by the bi-lateral method. After making the section through the prostate, the stone was immediately seized and extracted at the first effort with the forceps. It being, however, soft, and a portion of it crumbling under the pressure of the forceps, several pieces were taken away with the scoop, and the bladder was very thoroughly syringed. The calculus was a triple phosphate very nearly round and one and a half inches in diameter. The patient commenced to improve immediately after the operation, and the wound was very nearly healed by the 16th of February, at that date only a drop or two of urine oozing from it. He sat up on the 17th, and on the 20th the wound was completely cicatrized, and the urine passed entirely by the natural route.

He rode out on the 22d, and gained so rapidly in flesh that in about two months after the operation he weighed 132 pounds, being 12 pounds more than his usual weight. When the calculus was cut in two a substance resembling yellow wax perfectly defined, and of about the size of a small split bean, was found directly in its centre. The patient stated that some four years before the operation a *homœopathist* had introduced yellow looking bougies into his bladder. They were probably made of some composition of which beeswax was one of the ingredients, and a portion of one of them broke off in the bladder, thus presenting a nucleus for the formation of the stone.

I have thought this case of sufficient interest to be reported from the very rapid recovery which the patient made from what seemed to be a very low and apparently almost hopeless condition for an operation, and also from the rapid cicatrization of the wound, for it was to all intents healed in about sixteen days, a fact which tends to disprove the assertion of those who contend that the closure of the wound is slower after the bi-lateral than after the lateral section. Dr. M. moreover informs me that before adult life he has repeatedly seen the wound entirely close in two weeks after the bi-lateral operation, on patients he has operated on. The nucleus of yellow wax found in the calculus also gives additional interest to the case.

The following is a very unusual and interesting case of the coexistence of a deformed pelvis with an enormous calculus in the bladder.

CASE II.—Mr. T., 50 years of age, very fat, and of large frame, has laboured for six years under vesical trouble. His physician, Dr. W. O'Baldwin, of Washington, has only recently attended him, and, suspecting the existence of a calculus in the bladder, requested Dr. May to see him, who on sounding him at his first visit, in March, 1873, detected a stone. The bladder was so irritable and so contracted from continuous spasm, and the examination consequently so painful, that the patient was put under the influence of chloroform while he was sounded.

The spasm of the bladder was so continuous that scarcely any urine could be retained, and it was constantly dribbling into a bottle placed between his thighs both day and night.

The size of the stone could not be determined while sounding the patient, as but a very limited portion of its surface could be touched, owing to the firm contraction of the bladder around it, and the impossibility to inject and retain the smallest quantity of water in that viscous for even a

few moments. The section performed was the bi-lateral, the double lithotome of Dupuytren being used.

The skin, fascia, and cellular tissue being divided, the knife encountered a hard substance running directly in the median line, having the same direction as the staff, and feeling to the finger precisely like that instrument. It appeared to be grooved, and the operator, at first, mistaking it for the staff, cut upon it, and then, placing the lithotome, as he thought, in its groove, he attempted to guide it in the usual manner into the bladder, at the same time depressing the handle of the staff. The lithotome failing to slide as it should have done, and not being felt on the staff, the operator at once saw that there was some mistake. Bringing back the staff to its former and customary perpendicular position, and then feeling very carefully with the finger, he detected the staff lying immediately behind the seeming staff, which had previously misled him. The instrument had to be now turned slightly to one side on account of its lying so directly behind this obstacle, and, being brought into position, the urethra was slightly opened, the lithotome placed in the groove and readily pushed on into the bladder in the usual manner.

The blades had been set so as to cut nine lines on either side of the prostate, thus leaving a margin of two lines before arriving at the periphery of the gland. Having withdrawn the lithotome, the forceps were introduced, and the stone was after much difficulty seized in their grasp. Even now, the bladder being opened, the great size of the concretion could not be ascertained with the finger, on account of the powerful and permanent manner in which the viscus was contracted over it.

All attempts now to withdraw the calculus (although it was firmly grasped and held in the forceps) were found to be utterly unavailing; the stone would not pass between the rami of the ischia, and stuck there as firmly as if it had been held in a vise. After a number of repeated and fruitless efforts, the extraction of the calculus entire was abandoned, and the crushers were introduced for the purpose of breaking the concretion and extracting it piecemeal. This proved to be a most exhausting and difficult operation, for the stone was of such extreme hardness (being a lithic calculus) that at every piece which was broken off, the whole strength of the operator had to be exerted.

Having taken away pieces to the number of twenty-five, and the operation having lasted a long time, the patient, being very greatly exhausted, was unbound, put to bed, and an opiate administered.

He survived this formidable operation much longer than was expected, dying on the fifth day from the time he was cut.

The supra-pubic operation was in this case out of the question, even if the great size of the stone could have been previously determined; for, as has been before stated, the bladder was in such a permanent and powerful state of spasmodic contraction; that the attempt to inject water proved ineffectual; it being thrown out by the force of the bladder's contraction the moment the catheter used in the injection was withdrawn.

At the *post-mortem* the remaining half of the stone in one solid piece weighing four ounces was extracted, it being found necessary, on account of the malformation of the ischium presently to be noticed, to depress the forceps, thus tearing away the soft parts before it could be extracted through the lower and greater outlet between the bones.

The dissection of the perineum showed the following state of affairs, and proved the impossibility of extracting a stone even of most moderate

dimensions through an opening of such diminished capacity. The ramus of the ischium of the left side ran in a perpendicular line upwards towards the symphysis pubis, instead of following the curve always taken by that bone. It occupied a position running directly in the same manner as the staff when introduced and properly held; it was so placed as to completely cover that instrument, and prevent the knife being entered in the manner which is customary when performing the bi-lateral section. For about half an inch on its anterior surface it was marked by a slight depression simulating the groove of the staff, and it was on this account, together with the extraordinary shape and position of the bone, that the mistake before alluded to of supposing it to be that instrument, was made.

The distance then between the ischii which ordinarily exists in the well formed pelvis was in this case diminished by about one-half.

The stone was composed of lithic acid, and weighed within a few grains of eight ounces troy weight. It was three and a half inches in its long and two and three-eighths in its short diameter.

ART. XIV.—*Case of Double Uterus and Vagina; Division of Vaginal Septum.* By EUGÈNE C. GEHRUNG, M.D., of Denver, Colorado.

THE rarity of this malformation, and the successful operation resorted to, will, I hope, make acceptable the report of the following case.

M. B., single, aged 17 years, menstruated for the first time about the age of 11 years. She consulted me Feb. 9, 1874, for a menorrhagic dysmenorrhœa and profuse leucorrhœa, which weakened her greatly. She also complained of habitual constipation and the passage of coagula towards the close of menstruation, and also of pelvic, abdominal, and thoracic pains.

Miss B. was previously under the treatment of a number of both regular and irregular practitioners, each of whom gave a different opinion of her case. She received no benefit whatever from their treatment.

By a digital examination through a narrow hymen—which scarcely admitted my index-finger—I found a small cervix, continuous with a small and hard body, beyond and to the left of the vaginal wall. My first impression was that I had to deal with a left latero-flexion of an atrophied womb. The same impression was conveyed to the finger by rectal touch; but, on reaching higher up, two similar but larger bodies were found in continuity with the former, and arching right and left with a large sulcus between them. I diagnosed double uterus. The whole organ was retroverted, and the left cornu was found to lean heavily against the rectum. Searching for a second vaginal aperture, I soon discovered a small fold of tissue at the site of the left portion of the hymen, into which a sound was passed, and, with the index-finger of the left hand in the right vaginal division, proved the septum intact up to the ossa.

On substitution—with some difficulty—of the middle finger of the same hand for the sound, I found that on each finger I could balance a complete and isolated neck, with a perfect septum between the fingers. The septum

measured from one-eighth to three-sixteenths of an inch in thickness, and each cervix had a diameter of about half an inch. Probes were passed into both wombs to a distance of an inch and a half, but could not be brought into contact; on the contrary, they diverged.

The point of union of the two uteri does not exceed half an inch in diameter; their length is about two inches, and the diameter of the body of each is only about six-eighths of an inch. Vaginismus was present to such a degree that examinations or attempts at treatment caused spasmodic pains for several days. The vaginal septum required division for the following reasons:—

1st. To remove the vaginismus.

2d. To remove the cause of the formation of the above-mentioned coagula; and,

3d. For the purpose of cleanliness, and especially the application of a pessary to correct the displacement.

I therefore proposed the division, which proposition was readily accepted and urged by Miss B. and her parents. Consequently, I operated on the second of June, assisted by my friends Drs. R. G. Buckingham and W. R. Whitehead.

Operation.—After complete etherization, the patient was placed in the left semiprone position of Sims, and a Sims' speculum introduced into the right vagina. Traction on the speculum made both vaginal apertures gape, and with a pair of long, straight scissors, the septum was carefully cut. After reaching the cervixes, the scissors were turned towards the Douglas cul-de-sac, and about half an inch more of the septum—which was prolonged in that direction—divided. There was no bleeding, beyond a little oozing. Two small but completely formed cervixes uteri, each with a plainly perceptible os, were now exposed to view. At a subsequent examination during menstruation blood was seen to issue from each os.

After-treatment and Result.—The patient was directed to remain quiet for a few days, to use twice daily an injection of a weak solution of permanganate of potash. The redundant tissue of the divided septum rapidly disappeared, and at the present date there is only a cicatricial elevation to be found at the lines of insertion of the former septum. By the use of a pessary (a modification of Hodge's closed lever), the retroversion was soon corrected, and the patient has had since a daily natural stool. Besides this, the pessary had the advantage of preventing reunion at the upper angle of the cicatrix—if there was any tendency to that present. A few mild applications to the mucous membrane of the cervixes and vagina soon arrested the leucorrhœal discharge. Dysmenorrhœa ceased, the quantity of menstrual discharge has become normal, and no coagula have made their appearance at her menstrual period since the operation. In short, Miss B. is now in perfect health.

I profit of this opportunity to express my thanks for the able and kind assistance rendered to me by Drs. R. G. Buckingham and W. R. Whitehead.

DENVER, July 28, 1874.

REVIEWS.

ART. XV.—*A Treatise on Food and Dietetics, Physiologically and Therapeutically considered.* By F. W. PAVY, M.D., F.R.S.; Fellow of the Royal College of Physicians; Physician to and Lecturer on Physiology at Guy's Hospital. 8vo. pp. 574. Philadelphia: Henry C. Lea, 1874.

UNTIL comparatively recently science could go no farther in analyzing the relations of food to life than this: Matter must be furnished to the living organism first to form the bulk of the growing body; secondly, to make good the loss of substance by the wear and tear of tissue involved in the living state; and, thirdly, to supply fuel for keeping up body-heat. Here theory used to stop, and the student in the domain of alimentation concerned himself only with the practical details of digestion and assimilation. And—alas for the slow spread of knowledge!—even some textbooks of physiology current to-day rest here in their presentment of the purposes of food, content with the meaningless phrase that food is necessary for the nutrition of the body, and the keeping up of animal heat. But of late years a new and far-reaching idea has been developing, which, finally taking the shape of a grandly simple but universal physical law, has now asserted its authority even over the domain of physiology, and forced us to study the phenomena of life from a new point of view. It is that not only is matter never formed *de novo* nor destroyed, but *force* is equally eternal, and its different forms are mutually convertible; that is, just as there is a fixed quantity of matter in the universe (for these fundamental laws stop at no barrier of time or space), so there is a fixed amount of *energy* to be got from the momentum of moving bodies, heat, light, electricity, chemical affinity, etc., and these several forms of force can be turned the one into the other. This beautiful conception is, it is needless to say, what is to-day called the doctrine of the *conservation of energy* and *correlation of the forces*. Proved beyond question as regards the phenomena of inorganic nature, it has, as just said, lately thundered at the door of the physiologist, and demanded recognition and homage at his hands also. For the living organism is as much a material system doing work, in the large sense of the phrase, as a clock, a windmill, or a steam-engine; and all general laws affecting the interactions of matter and force must plainly apply here as well as elsewhere. The phenomena of life, then, being deeds wrought upon matter, are effected by some form or forms of force, and their doing is attended with expenditure of actual energy, exactly as in case of a machine of wood or iron. Physiology thus has a new problem to solve, to account in mode and measure for the energy used up, or more correctly *converted* in the doing of life-work. And at once a new light breaks in upon us in considering the why for the ceaseless feeding of living things upon outside matter. Life is a display of action; for all action an equivalent of energy is demanded; *chemical affinity* is a force, and *chemi-*

cal union sets free actual energy in available form. What is plainer, then, than that a fundamental purpose of food is to furnish the needed energy for life-purposes *in posse*, in the shape of organic matter ready to undergo chemical recombinations?

At bottom, then, at least so far as the adult animal is concerned, alimentionation means the conversion of food-energy into life-work, and the problem has now to be studied from a strictly physical as well as physiological point of view. This has been done, and, during the last few years, what with a better understanding of the laws of chemical dynamics and improved methods of physiological research, our knowledge of food, in its relations to life, has made such strides, that a systematic presentment of the whole subject in English has been a real want. This is the scope of the book now before us, and no higher praise can be given to Dr. Pavy's treatise than to say that until more facts shall be learned, there will be little need of any other writer spending time in covering just the same ground. The work has all the peculiar merits that make the best class of English medical books the best in the world; that is, it is clear and straightforward, not encumbered with masses of irrelevant learning like so many of the ponderous tomes of Germany, but yet dealing with the scientific aspect of its subject with a thoroughness often lacking in the literary efforts of the American "busy practitioner." It is, moreover, no mere compilation; but the author, being himself a student in the path wherein he treads, gives us many facts of his own working out, and commands a respect for his opinions, which the mere bookmaker can never deserve.

The keynote of the book is the relation of food to life-work on the doctrine of the conservation of energy. The work is not divided into numbered chapters, but the topics are dealt with under the following general headings:—

"Introductory Remarks on the Dynamic Relations of Food."

"On the Origination of Food."

"The Constituent Elements of Food."

"Alimentary Principles—their Classification, Chemical Relations, Digestion, Assimilation, and Physiological Uses."

"Alimentary Substances."

"The Preservation of Food."

"Principles of Dietetics."

"Practical Dietetics."

"Therapeutic Dietetics."

Practically the book falls into three parts: the first, a discussion of the physiology of alimentionation, including the *rôle* of the different alimentary principles in nutrition; the second, a detailed consideration of food-substances; and the third, a building up of the principles and practice of dietetics upon the groundwork thus laid down.

In the "Introductory Remarks" our author first briefly defines the general idea of the conservation of energy, and then points out the relations of food as the source of vital energy, tracing the power locked up in food to the force of the solar rays. And when we say that these vast ideas are expounded in the short space of seven pages of large print, the reader need not be told that they are dealt with briefly and categorically. We wish indeed that this chapter, containing, as it does, the foundation of the whole superstructure, were five times its present size. Of course, strictly speaking, the fundamental truths of physics and physiology have a right to be assumed in a special treatise like the present; but as they are, un-

fortunately, subjects that the medical man is apt *not* to thoroughly know, Dr. Pavy would have been surer of the intelligent following of his reader had he dwelt on them a little more fully. On the vexed question of whether or not there is a distinct vital "force" or "principle," our author's remarks are very sensible. Waiving fruitless discussion about what determines the occurrence of vital phenomena, he contents himself with pointing out the practical fact that the *forces* actually in play are the physical forces, the *effects* being peculiar on account of the peculiar character of the living machine operated on.

Under the heading "Origination of Food" are discussed the relations of animal to plant-life, and of the latter to the sun. An animal is strictly a system for turning potential energy into actual work, and the source of power is found in oxidizable chemical compounds taken as food. Now matter capable of combining with oxygen under the conditions presented by the living animal neither exists native, so to speak, nor can the animal form such out of inorganic material. Whence then our food? As is well known, it is obtained directly or indirectly from the vegetable kingdom, and the reason lies in the fact that the plant can do what the animal cannot, namely, take the fully oxidized compounds of the mineral kingdom, forcibly dis sever part at least of the oxygen from the combination, and form new products from the residue. These so-called *organic* compounds, containing as they do less oxygen than the associated elements are capable of combining with, possess potential energy, and are available as food. Animal life is thus utterly dependent on vegetable for its maintenance. But in thinking of the peculiar feat of the plant just described, we see that it is in kind the reverse of what is done by the animal. He turns pent-up energy into actual work; his vital deeds are as the falling of the hammer on the cap, the explosion of the powder, and the rushing forth of the ball when a rifle is fired. But the dissociation of oxygen from combination by the green leaf is on the contrary a *storing* of energy—it is the act of loading, capping, and cocking the gun, and stands in reciprocal relation to the doings of animal life. But whence comes the energy thus pent-up by the plant in forming organic products? To carry out our simile, whose hand is it that rams home powder and ball, and draws back the hammer? The sun's—the actual energy contained in the solar ray is the power which, by means of the green leaf as the instrument, overcomes chemical affinity, tears out part of the oxygen from carbonic acid, water, and ammonia, and hides itself like the charge in a gun in the reoxidizable compounds resulting from the chemical break-up. Thus all vital action has its final source in the sun's light and heat; and, looking at life in general, we see the following cycle of changes. As regards matter, inorganic is changed to organic by the plant, a process involving deoxidation; and organic is reconverted into inorganic, or started on the road thereunto, by the animal, through reoxidation of vegetable products taken as food. As regards force, the actual energy shot forth by the sun is converted into potential chemical energy in the formation of deoxidized compounds in the plant; and potential chemical energy reappears as actual when these products are reoxidized in the animal, being reproduced as heat, muscular motion, nervous, secretive, or formative action, etc. Thus in every way plant-life and animal-life are reciprocal in action. The setting forth of these fundamental truths is the theme of the chapter under consideration, and our only criticism thereupon is to suggest that our author in his next edition lop off three million miles or so from his stated distance of earth

from sun. Astronomy no more stands still than physiology, and the 95,000,000 miles solar distance of our school-days is altogether a thing of the past.

The chapter on the "Constituent Elements of Food" is a single page, enumerating the chemical elements entering into the composition of the human body.

The next section on "Alimentary Principles" is over a hundred pages long, and is practically a complete digest of the physiology of alimentation, from the point of view of the relation of each natural group of food-principles to the purposes of life. In this connection many new facts have been worked out of late, which overthrow Liebig's once generally accepted theory of nutrition, and as the new views seem to have hard work to gain even mention in some of our American text-books of physiology, we earnestly advise the careful reading of this admirably arranged chapter, and shall give a fuller abstract of its contents than the purposes of mere criticism really require.

Dr. Pavy very properly classifies foods solely on the basis of their chemical nature, and for study divides them into four groups: "1. Nitrogenous principles. 2. Hydrocarbons or fats. 3. Carbohydrates. 4. Inorganic materials." Taking them up in order, the nitrogenous principles are first considered. These are enumerated, their digestion discussed, and then the important question of the purposes they fulfill presents itself. In general, what life requires at the hands of food is matter for the growth and renovation of tissue, and matter which primarily or secondarily shall yield by chemical transformation the energy consumed in life-work. So far as the first purpose is concerned there is no question of the rôle played by the principles under consideration. The nitrogenized material of the tissues and secretions must of course be derived from the nitrogen-containing principles of food. But as regards the relation of these principles to force-production we have new facts opposed to the formerly accepted view of Liebig. In the technical sense of the phrase, the greatest amount of work done by the living animal requiring the expenditure of measurable energy, is in the form of muscular and nervous action. Of these again, muscular movement is dynamically the greater, and for the purposes of the discussion may be taken as typifying the conversion by animal-life of energy into work. Now Liebig, as is well-known, advanced the theory that the energy consumed in muscular action is derived from oxidation of the muscle-substance itself, whereby, of course, the latter suffers disintegration in proportion to the work done. Such assumed destruction of substance, of course, involves corresponding renewal, and the tissue being nitrogenized, nitrogenous food can alone make good the loss. Accordingly nitrogenized matter is not only of prime importance as the essential building material of the body, but is also indirectly the source of all vital energy. "What wonder then," as Dr. Pavy says, "if with all these purposes to fulfil, the nutritive value of food should have been measured, as it latterly has been, by the amount of nitrogenous matter it contains?" But this plausible theory will no longer stand, for facts now tend to show that the energy put into muscular work is derived mostly from oxidation of non-nitrogenous matter, "the muscle merely serving as a medium for the conversion of the generated force into motor power."¹ The line of argument is as follows:—

¹ A more correct phrase would be "for the conversion of the *liberated energy* into motor work." And, indeed, though Dr. Pavy in his first chapter points out

"Does the force evolved by muscular action proceed from destruction of muscular tissue? If so, nitrogenous matter would be needed to replace the loss incurred, and the result would be equivalent to nitrogenous matter through the medium of muscle being applied to the production of motor power. Now, if muscular action is coincident with the destruction of muscular tissue, there must, as a product of the destruction, be a nitrogen-containing principle eliminated. The elements of the compounds that have served their purpose in the economy do not accumulate, but are discharged from the system under certain known forms of combination. The nitrogen, therefore, belonging to a consumed nitrogenous structure should be recognizable in the effete matters thrown off from the body. Nay, more, as the force developed by muscular action cannot arise spontaneously—as it can be produced only by transmutation from another force—the destruction of muscular tissue (which through the chemical action involved supplies the force), should be in proportion to the amount of muscular work performed, and the nitrogen contained in the excreta in proportion also to the amount of muscular tissue destroyed." (p. 55.)

Urea is the great channel for the excretion of nitrogen, and the amount of this element thereby eliminated so nearly equals the sum of that originally taken in food, that for all practical purposes the urea may be considered as representing the whole of the nitrogen excreted. Now were Liebig's theory true, two things should happen: First, the amount of urea passed should vary with the muscular work done, rising and falling according as the individual exercises or rests; and, secondly, the amount excreted during exercise should express an amount of chemical action equivalent to the energy needed to do the stated quantity of work. But lo! when put to the test of accurate observation and analysis, neither circumstance obtains. Other things being equal, the excretion of nitrogen is wholly unaffected by even violent and prolonged muscular action; and in carefully conducted experiments it is found that in arduous muscular work the energy represented by the chemical action concerned in forming the urea excreted does not begin to be enough to produce the given effect—as Frankland found in Fick and Wislicenus's experiment, equalling only one-fifth of the energy actually consumed. But what *does* turn out to be the case is that the amount of nitrogen excreted varies directly with the quantity of the same element taken in food, and that, too, irrespective of whether the individual exercises or rests. Dr. Pavy analyzes at length the various experiments by which these facts have been obtained. They all tend one way, with the apparent exception of Weston's five-days walk in 1870, in the attempt to make four hundred miles within that time. In this case Dr. Flint, Jr., of New York, conducted the observations, and he claims that the results support instead of controverting the Liebigian theory. We cannot give the space to follow our author's analysis of Dr. Flint's exhibit, and must refer the reader to the book, merely saying that Dr. Pavy shows, as we think, conclusively, that a proper viewing of the results leads really to the opposite conclusion to that drawn by Dr. Flint; for the energy expressed in the urea actually excreted by the pedestrian during the walk, amounts at the most to only one-third of that really expended in accomplishing the work done.

Muscular tissue then does not consume itself as fuel in doing work, and the assumed rôle of nitrogenous food-principles to repair this imaginary

the modern technical distinction between "force" and "energy," he often uses the words in the old way as convertible terms. This is unfortunate, for the subject is in its nature so abstruse that it will not safely bear any loose use of its terminology.

waste has no place in fact. At once two questions arise: first, what then *does* become of the bulk of the nitrogen-containing food in the adult; and, second, what is urea, if only a small percentage of it can be a product of muscular and nervous tissue-metamorphosis? One answer suffices for both: instead of nitrogenous food first becoming tissue, which by work is disintegrated into urea, the tissue suffers but trifling waste, and the great bulk of the nitrogenous food-matter is *directly* broken up into secondary compounds, of which urea is one of the final results. That is, urea is the product of disintegration of *food*-elements instead of *tissue*-elements. The proof is twofold: first, if muscle does not waste in work, the main bulk of urea cannot be anything else than a direct derivative of the food: and, secondly, there is positive evidence that the urea-excretion varies directly within certain limits with the amount of nitrogenous food taken. Dr. Pavy here takes up the important question of the rate of the chemical change leading to the formation of urea, and gives us the results of original experiments performed by his own laboratory assistant. These show that the splitting up of the nitrogenous food-principles into urea and other compounds takes place promptly, a decided rise in urea-excretion occurring within three hours after a hearty meal on animal food following a previous non-nitrogenous diet.

The next question is, does this metamorphosis of nitrogenous matter subserve any useful purpose? The *urea* formed is plainly a waste product, but comparing its percentage composition with albumen, as the type of the nitrogenous substances out of which it comes, it is found that assuming the urea to contain all the nitrogen of the albumen, it can represent but one-third of the whole bulk of the original material. When albuminous substances, then, break up and urea is formed, there must always be left a residual non-nitrogenous portion equal to two-thirds of the original mass. Moreover this latter compound, though containing some oxygen, has carbon and hydrogen present in excess. It is then still an oxidizable material, and therefore represents potential energy, like fat, starch, or sugar. And deducting the energy carried off unutilized in urea, the quantity remaining to be actually obtained from albumen is about half that yielded by an equal weight of fat, but is somewhat greater than that afforded by sugar or starch. As to the form and actual physiological history of this residual compound of albumen, it is possible and even probable that it may appear as fat, but positive proof is wanting.

As regards *gelatinous* principles, while their power to form tissue is doubtful, there is no question that, like albuminous substances, they split into urea and an oxidizable, and therefore energy-containing residue; for "the elimination of urea is augmented by the copious ingestion of gelatin, just as happens in the case of the protein compounds." (p. 96.)

Coming next to the non-nitrogenous group of principles, our author begins:—

"While nitrogenous matter may be regarded as forming the essential basis of structures possessing active or living properties, the non-nitrogenous principles may be looked upon as supplying the source of power. The one may be spoken of as holding the position of the instrument of action, while the other supplies the motive power. Nitrogenous alimentary matter may, it is true, by oxidation, contribute to the generation of the moving force, but, as has been explained, in fulfilling this office there is evidence before us to show that it is split up into two distinct portions, one containing the nitrogen which is eliminated as useless, and a residuary non-nitrogenous portion which is retained and utilized in force-production. It is true, also, as will be shown hereafter, that

non-nitrogenous matter may be applied to tissue-formation, but it is probable that, in doing so, it is simply for the purpose of being stored up for subsequent appropriation to force-production, according as circumstances may require.

"The non-nitrogenous alimentary principles comprise—

"1st. The hydrocarbons or fats; 2d. The carbohydrates, starch, sugar, etc.; and 3d. Principles, such as alcohol and the vegetable acids, which do not strictly fall within either of the preceding groups." (p. 97.)

Taking fats first in order, we have their chemistry and digestion briefly discussed, and then at once a consideration of their purposes as aliments. Fat is an element of tissue, and doubtless the greater part of the fat of the body comes from the fat of the food. But, as adipose tissue, fat plays a passive rôle, as a mere non-conductor of heat and convenient form of padding. In this state, however, it "forms a store of force-producing material to be drawn upon as circumstances may require"—as witness the history of hibernating animals. In this connection our author gives us—not a cock-and-bull-story, but a cliff-and-pig story, which, if not as tragic as the famous ballad of the "Mistletoe Bough" which it irresistibly suggests, is yet far more astonishing in its *dénouement*. He was a fat pig, weighing one hundred and sixty pounds, and his home was a six-foot hole with a wooden door dug out of the white cliffs of sea-girt Albion; and a part of the cliff fell and sealed up the pig, living, in his sty, as hopelessly as the treacherous lid of the ancient chest entombed the hapless bride of the old ballad. And one hundred and sixty days afterward, when some workmen were clearing away the rubbish, behold—"a skeleton form [did *not*] lay mouldering there!" but—a whine from that pig did rend the air, to the considerable astonishment, evidently, of the workmen. They immediately reported the fact to a Fellow of the Linnæan Society, who "urged them to proceed." They did so, and we are told that the scientific gentleman was "surprised," as well he might be, when that pig was shortly unearthed in the flesh, though not in very much thereof, for forty pounds was all that was left of his former goodly proportions. By licking the sides of his tomb for moisture, and by quietly appropriating three-fourths of his own substance as food, he managed not only to support life for one hundred and sixty days, but to win immortality in the Transactions of the Linnæan Society, vol. xi., where the tender tale of his toughness may be found. We feel disposed to ponder on how the story of the "Mistletoe Bough" would have run, had only the giddy young bride been a middle-aged comfortably fat matron, and had the old oaken chest stood in a reasonably damp cellar where moisture could have been had for the licking—but we forbear.

What now of the rôle of fat as a source of energy through direct oxidation in the system? According to Liebig's theory, such primary combustion takes place, but its only outcome is body-heat. But the new departure claims that it is to this source that we must also look for the bulk of the energy consumed in vital action—that hereby, indeed, we get the power formerly erroneously supposed to come from disintegration of the acting tissue-substance itself. The argument is simple. If work-energy come from nitrogenized tissue-metamorphosis, the *urea*-secretion should increase with exercise. It does not. If then the energy come from oxidation of non-nitrogenous food-matter, the elimination of *carbonic acid* should rise with work. And it does, increasing enormously under muscular exercise. Negative and positive proof thus agree, and instead of Liebig's surmise that the nitrogenous tissues are both machinery and fuel, we see that the case is really more like that of an ordinary engine. The

structure itself suffers only the inevitable wear from work, and the power comes from an independent burning of fuel—from the primary oxidation of non-nitrogenous matter. But here we must not go too far, and think that fat, eaten as food, is the only source of this fuel. All oxidizable matters answer the purpose to the extent of their mechanical equivalents, and therefore we must include, among sources of energy, the other non-nitrogenous food-principles, as well as that non-nitrogenous residual substance which, be it remembered, results from the break-up of nitrogenous foods, and also, it may be here added, from what little disintegration of nitrogenous tissue does occur in the wear and tear of living.

In the matter of the *carbohydrates*, after the usual preliminaries as to chemical composition and digestion, our author points out that the principal members of the group all reach the portal circulation as saccharine matter, and then wholly disappear as such in the liver. Experiments and observations are brought forward to show the probability that this disappearance is due to conversion of the sugar into the amyloid substance of the liver; that this new material is further transformed into fat; that this change also takes place in the liver, but can only occur through co-operation of nitrogenous and saline foods; that the fat thus formed is dealt with like fat originally introduced as such; that moreover the splitting up of nitrogenous food, already described, likewise has its seat in the liver, and that the non-nitrogenous residuum thereby formed passes through the condition of amyloid substance into fat exactly like the carbo-hydrates of food.

From all this it appears that the details of the new theory of alimentation are more complex than in the Liebig hypothesis. And to enable the reader to grasp better what is clear enough as our author sets it forth, but perhaps somewhat confusing in our own condensed abstract, we venture to present Dr. Pavy's conclusions in tabular form, where, reading from left to right, the alimentary history of each of the important groups of organic food principles can be followed. The final derivatives, when useful, are printed in small capitals, when useless, in italics.

Nitrogenous food:—

A. Albuminous.	1. Splits in liver into	1. Nitrogenous portion finally appearing as <i>urea</i> .					
		2. Non-nitrogenous portion, first amyloid substance, then fat: SAME DESTINY AS FATTY FOOD.					
	2. NITROGENOUS TISSUE: this by slow wear	1. Nitrogenous product finally appearing as <i>urea</i> .	2. Non-nitrogenous product (fat?)	1. <i>Fatty degeneration (?)</i>	2. Energy by oxidation	1. BODY-HEAT.	2. VITAL WORK.
3. NITROGENOUS PRINCIPLES OF SECRETIONS.							
B. Gelatinous.	1. Splits in liver into	1. Nitrogenous portion finally appearing as <i>urea</i> .					
		2. Non-nitrogenous portion, first amyloid substance, then fat: SAME DESTINY AS FATTY FOOD.					
	2. OTHER DESTINY?						

Non-nitrogenous food:—

A. Fats.	1. Energy by oxidation	1. BODY-HEAT.
		2. VITAL WORK.
	2. FAT OF TISSUE: in emergency, energy by oxidation.	1. BODY-HEAT.
	3. FAT OF SECRETIONS.	2. VITAL WORK.
B. Carbohydrates.	Saccharine matter by digestion, amyloid substance, then fat in liver: SAME DESTINY AS FATTY FOOD.	

Alcohol is intermediate between the carbohydrates and fats. In this place its food-value only is considered, and the demonstrations of Anstie, Dupré, and others are accepted as overthrowing the views of Lallemand, Duroy, Perrin, and Edward Smith, and establishing the fact that ingested alcohol is practically wholly destroyed as such within the system. Whence our author very sensibly concludes: "If this be the case, it may be fairly

assumed that the destruction is attended with oxidation and a corresponding liberation of force, unless, indeed, it [the alcohol] should undergo metamorphosis into a principle to be temporarily retained, but nevertheless ultimately applied to force-production." (p. 141.) He further suggests that the subject be studied physiologically, as well as chemically.

A few pages on the *inorganic* alimentary principles completes this long section.

The chapter on "Alimentary Substances" begins the practical part of the book, and covers 250 pages. The various articles of diet, both usual and unusual, are taken up separately, and all information bearing on their use as food is given, including the causes and effects of unwholesomeness, and how to recognize the bad condition. The subject of adulteration, not properly coming within the scope of the work, is not treated of. Condiments, because "not strictly alimentary substances," are dismissed with a mere enumeration, but the various beverages in common use are freely discussed. Speaking first of drinking in general, Dr. Pavy insists that the popular fear of unduly diluting the gastric juice by too much fluid has no foundation in fact, and that indeed much mischief results from the prevalent habit of sipping strong drinks instead of taking goodly draughts of innocent ones. As regards the popular "neurotic" beverages, in these days of difference of opinion, and not always perfectly cool arguing concerning their physiological rôle, one turns with interest to see what each new author says on the subject. Dr. Pavy's account of the action of tea and coffee is far from satisfactory, his conclusions being painfully lacking in precision of statement; an unexpected failing in one elsewhere so severely analytical in method. In the case of tea, after premising that medical difference of opinion on the subject of prescribing tea-drinking, "testifies to the want of some definite guiding principle of action," he gives the following as "an attempt to furnish a concise representation of what is known" as a "basis for greater uniformity of procedure:"—

"Tea forms a light beverage, which is neither heating to the system nor oppressive to the stomach, in which respects it differs from coffee. Taken in moderate quantity, it may be spoken of as exerting an exhilarating and restorative action without stimulating or inebriating like alcohol. By such action it exerts a reviving influence when the body is fatigued, but perhaps some of the effect is also attributable to the warmth belonging to the liquid consumed. It disposes to mental cheerfulness and activity, clears the brain, arouses the energies, and diminishes the tendency to sleep; to such an extent, it may be, in some sensitive persons, as to occasion a painful state of vigilance or watchfulness, and sleeplessness." (p. 341.)

Then after speaking briefly of the symptoms following abuse of strong tea, he goes on:—

"Tea, like coffee, appeases the sensation arising from the want of food, and enables hunger to be better borne. Lehmann was of opinion that it lessened the waste of the body, but Dr. E. Smith asserts that it increases slightly the amount of carbonic acid exhaled, and he thereby speaks of it as promoting rather than checking chemico-vital action. More conclusive evidence, it may be considered, is required in reference to this matter, to show that any decided action either way is exerted." (p. 342.)

Surely Dr. Pavy should give us something better than this; for if tea and coffee have place at all in an essay on food, the vast subject they open up, of the influencing of vital processes in the direction of health by means other than the furnishing either of tissue-pabulum or potential energy, should receive the attention it deserves. But here the only attempt to ana-

lyze such influence is contained in the single line stating that tea exerts an "exhilarating and restorative action without stimulating or inebriating like alcohol." We feel like sighing in despair. Shall we *never* pitch this old-man-of-the-sea "stimulation" off our back, or is he a sort of physiological handycap to be shouldered as a matter of course at the outset of every inquiry into the influence of agents on the phenomena of life? Not that there is any objection *per se* to the word "stimulus," but the trouble is that those who use it never say what they mean by it, expressed in definite physiological terms. Now it is one thing, now another, and the word, therefore, instead of conveying an idea, only serves to perpetuate confusion of thought. Thus, in the case in point, can any more obscure conundrum be put than to ask what is the difference between the "restorative" action of tea which has no food-power, and the "stimulant" influence of alcohol which, on the contrary, *has* a true food-action? Yet such undefined difference is here made the practical key towards an intelligent prescription of the purely "restorative" agent. The analysis of the action of coffee amounts to about the same thing as with tea, except that coffee "exerts a more heating and stimulating action than tea, and increases in a decided manner the force and frequency of the pulse." Here again we have it: coffee to a certain extent "stimulates," that is, it goads or urges on—well, what to do what? Not the heart to beat, for acceleration of pulse is referred to *in addition* to the "stimulation." What then? Echo answers, and his remarks are never worth recording in a scientific journal.

As to alcoholic beverages, the power of alcohol to yield available energy by oxidation was discussed and admitted in an earlier part of the book, and in this place the peculiar effects of the fluid itself upon the system are briefly alluded to. Dr. Pavy surprises us by seeming to lean to the side of those who still imagine alcohol to raise body-heat, instead of lowering it. He cites Parkes and—erroneously—Anstie to that effect. Anstie's quoted observation of a rise of temperature, after alcohol, in a rabbit's ear was rightly interpreted by himself only as showing changes in the *distribution* of heat, in the shape of a determination to the surface from vaso-motor paralysis. But as regards the influence on body-heat in general, Anstie is among those who maintain that alcohol causes a fall of temperature, and we must say that in view of the very large mass of evidence to that effect now on record, we do not understand Dr. Pavy's apparent unwillingness to concede the point. In the matter of alleged repression of tissue-metamorphosis, our author again avoids assenting to the commonly received notion. We cannot find fault with him here, for we think that on this head current arguments need a thorough overhauling. As regards the question "whether the effect of alcohol is to increase or diminish the facility with which work is performed," Dr. Pavy merely quotes, without comment, Parkes's experiment where a healthy, temperate, well-fed, and regularly worked soldier has suddenly added to his dietary *three four-ounce drinks of strong brandy* per diem, with the inevitable effect that he was thereby put out of sorts, and lost his energy and "wind." But in drawing from this result the general conclusion that alcohol "diminishes the facility to do work," we must be careful not to confound different things. Parkes's experiment proves only what has been practically known for centuries, namely, that a healthy well-fed man has no hidden storehouse of strength or endurance which can be unlocked by alcohol; but that, on the contrary, if such a person take suddenly enough strong drink to affect him at all, it will be sure to make him less capable for work

than before; unless, indeed, cheap after-dinner wit and garrulity count for such! But how is it when a man who is underfed, or overworked, or both, takes with his evening meal a reasonably moderate quantity of a reasonably dilute alcoholic beverage, such as the light wines and malt liquors? It needs no very great acumen to see that the conditions here are entirely different from those of Parkes's experiment, and that we cannot argue from the results in the one case to the other. As to the vexed question of teetotalism *vs.* temperance in the ordinary routine of civilized life, Dr. Pavy will doubtless disappoint many readers by letting it severely alone. He gives his views of the *effects* of alcohol, as indicated above, and then lets the reader take wine or water with his dinner according to the dictates of his own conscience and understanding. And herein we think he is entirely right, for to attempt to lay down the law on this many-sided question is simply to pillory one's self as a voluntary target for every extremist's ready handful of dirt.

The next section is a short one of five pages on the modes of preserving food, and then we come to an important and excellent chapter on the "Principles of Dietetics." The following is the ground covered, facts being amply cited to justify the conclusions drawn. Milk and egg, Nature's ready made food, hint by their complex composition that a combination of alimentary principles alone can afford a proper dietary for the animal. Observation verifies the hint, for an animal starves on any single food-principle, even the nitrogenous. Thus the several groups of principles beside their proper alimentary destiny, as set forth in the earlier part of the book, *react on each other*, as it were, the one, in some unknown way, directly determining the utilization of the other, as nitrogenous matter is necessary for the forming of fat out of the material of the carbohydrates. A mixed diet being then indispensable, the next question is the amount, absolute and relative, of the different kind of principles needed for proper alimentation, and practically this concerns only the organic substances. But it is plain that no universal formula can be laid down, for the dietary must vary with the varying conditions of man's state. Climate must be taken into account, for it takes more food simply to keep up the body-heat in cold weather than in hot. But other things being equal, it is to *work* that the dietary must be especially adapted. Here Dr. Pavy reviews once more the Liebig theory and its modern substitute. Of course from the point of view of the latter, the formerly-assumed importance of nitrogenous food to supply the imagined excessive tissue-waste caused by work, no longer holds place. Moreover, even viewed purely as a source of energy, nitrogenous matter holds a comparatively low rank, for a seventh of its potential energy escapes unutilized, as urea. Frankland's table of the comparative "force-producing" value of the various common articles of food is quoted, from which it appears "that .55 lb. of fatty matter will furnish the same amount of power as is obtainable from 1.3 lbs. of flour, 1.5 lbs. of sugar, 3.5 lbs. of lean beef, and 5 lbs. of potatoes." (p. 417.) Or, in cost, "the same amount of work is obtainable from oatmeal costing $3\frac{1}{2}d.$; flour, $3\frac{3}{4}d.$; bread, $4\frac{3}{4}d.$; and beef-fat, $5\frac{1}{2}d.$; as from beef costing $3s. 6\frac{1}{2}d.$, and isinglass, $\pounds 1\ 2s. 0\frac{1}{2}d.$ " (p. 418.) But we must not let ourselves slip into the error of supposing that the supplying of energy is the sole purpose of food, and that therefore the alimentary value of different articles is in exact proportion to their mechanical equivalents. For, in the first place, although the muscles are not, as Liebig supposed, their own fuel, in action, yet there is a certain amount of wear and tear of tissue

inseparable from the doing of work, exactly as with the parts of an engine or other machine; and nitrogenous food is needed to make good this waste. Again nitrogenous principles play an all-important rôle as ingredients of secretions and in determining the utilization of the other food-elements and the proper performance of many of the vital functions; so that, since hard work means accelerated vital action generally, here is another reason why this kind of material must be plentifully supplied to the labourer. The new theory of vital dynamics is thus not at variance with the notorious fact that "hard work is best performed under a liberal supply of nitrogen-containing food." The rest of the chapter is an elaborate study of the actual amounts of the various alimentary principles required for the support of life under varying conditions, with an analysis of a great number of tables drawn from many sources.

The following section, "Practical Dietetics," deals, as its name implies, with the practical considerations concerned in the actual taking of food. Here we have throughout an exhibition of strong English common sense, the author never being led into opposing the plain teachings of ordinary experience by fanciful theoretical conclusions. We should like to give a *résumé* of the chapter, but it is itself so condensed that it is impossible to make an abstract in the space at our command. The topics treated of are the "proper food of man," "dietetic relations and effects of animal and vegetable food compared," "proper amount of food," including a consideration of the effects of deficient or redundant supply, "times of eating," and "cooking." Dr. Pavy advocates a mixed diet, as opposed to strict vegetarianism, but makes a point of showing, by theory and experience, "that the consumption of meat to the extent that many persons believe necessary for the maintenance of health and strength is not in reality so." (p. 461.) Animal food should form about one-fourth of the dietary. Three meals a day are advised, the last not later than six or seven o'clock; and whether this or the midday repast should be the more substantial must vary with the occupation of the individual, the principle being to avoid having to do hard work soon after a hearty meal. The system common to many city men of taking nothing between breakfast and a late dinner is, as it should be, severely condemned.

A few pages on the "Diet of Infants" comes next, but contains nothing calling for special comment. This section is followed by five pages on "Diet for Training." Here our author says that "the tendency of the present day is not to attach so much importance to strictness of diet as formerly, and perhaps the latitude given is sometimes beyond what is desirable." (p. 498.) We are not so sure of the truth of the latter part of the remark, as concerns training in America at least, and certainly Dr. Pavy could hardly apply it to the Oxford system which he quotes. One can hardly see how the dietetic lines could be more closely drawn than in the following scheme:—

"*A Day's Training for the Summer Races.*—Rise about 7 A. M. A short walk or run. Breakfast at 8.30, of meat (beef or mutton, underdone), bread (the crust only recommended), or dry toast, and tea (as little as possible recommended). Dinner at 2 P. M., of meat (much the same as for breakfast), bread, and no vegetables (a rule, however, not always adhered to), with one pint of beer. About 5 P. M., a row twice over the course on the river, the speed being increased with the strength of the crew. Supper at 8.30 or 9, of cold meat and bread, with perhaps a jelly or watercresses, and one pint of beer. Retire to bed about 10." (p. 501.)

This is about the diet, only *minus* the beer, to which we vividly remember subjecting our reviewing self in college rowing days; and oh! the foul loaded tongue, the boils, the savage temper, and general upsetting of a previous high state of health and vigour! But happily we are gradually learning that the severe process necessary to gain the battle to the prize-fighter, does not wholly apply in the case of the rower. The first must train off all his fat to keep his flesh from puffing up under the brutal pounding to which it is exposed, but the other is of course under no such peculiar necessity.

The last section is on "Therapeutic Dietetics." This is thoroughly practical, and again marked by good, straightforward sense. We only wish the subject were dealt with in even greater detail. After a few general remarks Dr. Pavy takes up the "particular diatheses or states of the body which different kinds of food tend to induce," as affording a key to rational therapeutic dietetics. In this connection he discusses, among other things, the influence of diet on gout, corpulence, diabetes, organic kidney disease, and urinary abnormalities. He then passes to dietetic considerations based on the state of the digestive function, both as affected by general disease, as in case of fever, and by primary disorder of the alimentary canal itself. The book ends with a collection of recipes for "Dietetic Preparations for the Invalid," followed by a very full list of English Hospital Dietaries of all kinds.

We cannot close without saying again that this is a solidly good book, well worth careful reading by every medical man. E. C.

ART. XVI.—*A Manual of Psychological Medicine, containing the Lunacy Laws, the Nosology, Ætiology, Statistics, Description, Diagnosis, Pathology, and Treatment of Insanity, with an Appendix of Cases.* By JOHN CHARLES BUCKNILL, M.D. Lond., F.R.S., F.R.C.P., Lord Chancellor's Visitor of Lunatics; and by DANIEL HACK TUKE, M.D., Member of the Royal College of Physicians of London, etc. Third Edition. Revised, Illustrated, and much Enlarged. 8vo. pp. 824. London: J. & A. Churchill, 1874.

WE bid a hearty welcome to this new edition of a work which for many years was the only one of English origin of much practical value, and which is still indispensable to all who would extend their knowledge of an important disease beyond what is required by the routine practitioner. Somehow it has happened that insanity has been made the subject of fewer monographs in our language than any other disease of equal prominence. Before Prichard's work, we had absolutely nothing of any clinical value, and his was far from supplying the deficiency. Dr. Prichard was a well-trained medical scholar, of various learning, and of a philosophical habit of mind, and these traits of his mental character were abundantly impressed on this as well as his other works. But he was deficient in clinical experience. He had none of that knowledge of the disease that can be obtained only by mingling intimately with the insane, observing their ways, their habits, their manner of thinking and feeling, and the varying phases of the disease in one and the same subject. He

sometimes generalized on a small basis of particulars, with results, of course, not always sustained by a broader survey of the field before him. Still his work will always be prized by the medical scholar, as the production of a highly philosophical observer accustomed to think for himself, unbiassed by prejudice or narrowness of view. With Bucknill and Tuke's as an exhaustive treatise, and Blandford's as a bedside companion, and Maudsley's as a guide to the higher regions of psychological speculation, the student may be considered as well provided for study and practice.

The present work is greatly enlarged by the introduction of new matter, and much improved by the rearrangement of some of the chapters. During the dozen years that have elapsed since the last edition was published, if no new principles have been established, there has, at least, been an accumulation of new facts and inquiries that could not be ignored in any faithful representation of the subject. Consequently, the book has now swelled to formidable dimensions, appalling to the physician of our day, who is reminded, every hour, that art is long and life is short. Still we think it will be found none too large for the purpose of reference.

In the chapter on Insanity in general are noticed the views recently expressed on Classification, *Ætiology*, and Statistics. The various methods of classification that have been proposed—symptomatological, psychological, physiological, *ætiological*, pathological—are noticed more particularly, perhaps, than their relative importance deserves. However this may be, most readers much acquainted with insanity will be inclined, we apprehend, to endorse the saying of Griesinger, that all classifications must in the end return to the principal forms of insanity—mania, whether acute or chronic, melancholia, and dementia—"because they are really founded on nature." Classification consists in bringing things together which have some features in common, and the merit of any particular system will be determined by the number and importance of these features, for thereby is conveyed more or less knowledge of the things associated together. To classify diseases by the bond of a single trait or incident may impart no more substantial information concerning them than we derive from the Linnæan system respecting plants. The fact, for instance, that a case of insanity has a tubercular origin, is well for us to know, because it may influence our treatment; but we cannot see what is gained by bringing all such cases into a common group. In another chapter Dr. Tuke considers "the various forms of insanity from a somato-*ætiological* point of view," the only common incident determining their association being bodily condition. Thus we have traumatic, epileptic, senile, puerperal, pellagrous, rheumatic, climacteric insanities, and so on. He considers it important to view the various forms of mental disorder from several points, and thus justifies his course. If any particular form, while retaining its essential psychical characters, presents another also over and above these, due to the somatic condition, and which may have been the most efficient agency in producing the attack, there can be no question, certainly, as to the importance of considering it in this relation, because, as already intimated, this may determine the treatment. While giving such a character all the weight it justly deserves, the doctor has wisely abstained from making it a basis of classification. A classification of mental diseases, that can be of any practical value, must be founded, we apprehend, on characters tolerably obvious and comprehensive; and such, in the present state of our knowledge, are chiefly psychical. Ex-

altation, depression, incoherence, raving, stupor, are phenomena discernible at sight; but the condition of the liver or lungs, the presence or absence of tubercle or syphilitic taint, congestion of the ovaries, etc., are matters to be deliberately investigated, and cannot always, with all our searching, be divested of doubt, so that, in fact, the patient may die before the physician has ascertained how to classify his disorder. The strongest plea in favour of a somatico-ætiological classification—that to know the cause is the first step towards learning the remedy—is more plausible than sound. Indeed, we are surprised that any one with much clinical experience can seriously urge it, for who has found those cases most readily yielding to treatment whose somatic conditions were most clearly understood? Then there is the other fact, utterly irreconcilable with such classifications, that half the time, at least, the exciting cause, or whatever name we choose to give to the agency most effective in producing the attack, is, to all appearance, exclusively psychical.

In discussing the causes of insanity, Dr. Tuke admits the paramount potency of hereditary transmission, as it has been generally understood. He also speaks approvingly of the doctrine, first strongly set forth by Lucas, and ably exemplified and enforced by Morel and Moreau, that the disease is often derived not merely from fully developed insanity in the progenitor, but from any abnormal condition of the cerebral organ. If we have any fault to find with this chapter, it is that the author does not give to this remarkable trait the prominence to which its importance justly entitles it. The proportion of cases attributable to overt disease in the progenitor varies, as stated by different observers, from thirty to seventy per cent. If we also claim an hereditary origin for those cases where the ancestral trouble was some other neurosis, such as epilepsy, hysteria, chorea, persistent headaches, or only some manifest mental irregularity, there will be few left in which the disease may be fairly supposed to have sprung up entirely independent of ancestral influences. In studying the ætiology of insanity, we are bound to make far greater account of the congenital organic defect than of those incidents which pass under the name of *exciting causes*, and which, being, as they are, chiefly accidental in their nature, have comparatively little scientific interest. It is well enough to know the last adverse incident which provoked an outbreak of insanity, because it may lead to some useful suggestions on the future conduct of the patient; but we shall have entered on a more fruitful field of inquiry when we study those conditions of the brain which prepare it for such attacks. There we shall learn something of the action of the ordinary physiological laws in vitiating the quality of the cerebral tissue, by which it is prepared for the operation of those abnormal activities which lead to overt disease. Study in this direction has already solved some dark problems in the production of insanity. It has demonstrated the presence of analogies not before suspected, and in place of puerile conjecture, given us an intelligent and rational philosophy. It has opened the only effectual way of preventing mental disease, however little heed may be given to it in actual practice. We learn from it something not learned before of the true relations between insanity, nervous deterioration, and crime, and look with a livelier hope for the success of future inquiries. We would not be misunderstood as making light of exciting causes as sources of disease, or a subject of investigation. We only object to the undue stress which is laid upon them, inasmuch as they are a matter of conjecture at the best, and are received and recorded

on the authority, for the most part, of the friends of patients, who catch only at casual incidents, and whose philosophy is solely of the *post hoc propter hoc* kind. With such materials, and such a way of considering them, it is not strange that the widest difference of opinion should exist respecting the effect of this, that, and the other, incident, in producing insanity, the comparative agency of physical and moral causes, and various other questions mooted in this connection. To ascertain among all the events and incidents of a man's experience, the particular thing which made him insane, requires a knowledge of his inner life that can be possessed only by an intimate friend, and not often by him, and a kind of philosophical sagacity not often witnessed in any. And yet with the knowledge of this subject as now obtained, elaborate tables are constructed with a show of great statistical accuracy, and discussions are based upon them as if they were the veritable foundation of a scientific opinion.

Dr. Tuke begins the chapter on *The Various Forms of Insanity*, by accepting the time-honoured division of the mental faculties into the intellectual, and moral or affective, and also fully recognizing the fact that mental disease may be confined exclusively to one or the other of these two orders. Accordingly he describes *erotomania*, *pyromania*, *kleptomania*, *homicidal mania*, etc., as distinct forms of disease, while remarking that cases have been sometimes referred to them improperly. All this will scarcely please those sapient observers who insist upon intellectual derangement as a constant element in all insanity, whether visible or not. It is to be regretted on account of its medico-legal relations that this scepticism should still exist, but we must console ourselves with such support as can be gathered from Pinel, Esquirol, Georget, Marc, Morel, Moreau, and others of scarcely less authority.

This part of the work is accompanied by cuts of sphygmographic tracings of the pulse, and illustrated by fac-similes of patients' writing. The former are acceptable as a record of what has been done in this way, though it may prove of little clinical use. The latter are highly instructive, and it is surprising that this source of information should have been so long neglected. More than any other it enables the observer to penetrate into the inmost recesses of the disordered mind, and discover mental movements undiscernible under the restraints of conversation. In letters to friends or others, in narratives of his performances or designs, in literary effusions in prose or verse, the person, so correct and sensible in his discourse, may betray his mental obliquity in the shape of delusion or folly, or that peculiar and indescribable succession of thought and turn of expression which is so characteristic of insanity. To the expert long familiar with the writings of the insane, the internal evidence thus furnished is not less forcible than the wildest discourse or the strangest conduct. In suspected simulation, the person's writings become an invaluable test, for while he may succeed in imitating tolerably well the aberrations of insanity in his discourse, he will inevitably fail when pursuing on paper a continuous succession of thoughts. Writers on the jurisprudence of insanity always advise the expert to examine the writings of people whose mental condition is in doubt, but, without a careful and considerable study of actual examples, the clew will hardly be obtained. Some persons, probably, by reason of mental inaptitude, would never succeed in catching the characteristic trait, and would continue to mistake the rambling of the disjointed mind for the artful device of the simulator. We are glad, therefore, that Dr. Tuke, following the

example of Tardieu, in his late work, has furnished to some extent the means of studying this manifestation of disease, though, in this limited way, its use will be chiefly to stimulate the inquirer to extend his studies in this direction. Indeed, we doubt if any contribution to the literature of insanity would be more highly prized by those who are capable of appreciating it at all, than a collection of the writings of the insane, judiciously selected, and arranged with reference to the respective forms of the disease by which they were prompted.

The chapter on *Diagnosis*, by Dr. Bucknill, the fruit of a large experience and of a nice discernment, not only exhibits very satisfactorily the present state of our knowledge, but abounds in original suggestions which, carefully pondered, will greatly aid the general practitioner. It will aid him in performing a professional duty more responsible and embarrassing than any other connected with the insane. Not that there is much danger of his mistaking insanity for some other disease, or *vice versa*, but that it becomes his business to prove its existence to the satisfaction, not only of his professional brethren, but also of courts, juries, and the newspaper press, who may make it *their* business to sit in judgment on his opinion, and punish him not only for an honest mistake, but even for a sound and just conclusion. He is obliged to reach his results, not alone, as in the case of other diseases, by means of those indefinable impressions derived from clinical observation and a true scientific insight, but rather by steps so sure, so plain, so significant, as to be appreciable to the meanest understanding. He is on that border-land between the law and the true science of insanity, abounding with snares and pitfalls, where the most honest and intelligent endeavour will not always ensure his safety. In determining upon his diagnosis, he is less anxious to be strictly correct, than he is to be able to maintain his position against the subtle assaults of those whose interest lies in proving him to be mistaken. And it has come to this, that many a physician, while clearly recognizing the insanity of his patient, and treating it as such, declines to sign a certificate, simply because the case may lack those very demonstrative indications which are associated with the popular idea of insanity. And the tendency of legislation and judicial decision is to render this duty more and more hazardous, for, under the influence of novel writers and newspapers, it would seem as if half the community had come to believe that doctors, hospital managers, and unprincipled relations, are ever ready to conspire to deprive a sane man of his liberty and property under the false pretence of insanity. In this country, the law requires in the certificate nothing more than the opinion that the person is insane and a fit subject for hospital treatment. In England, the physician must also give the grounds of his opinion; that is, the particular traits or incidents indicative of insanity, distinguishing those learned from others from such as were observed by himself; and the understanding is that the latter is entitled to far more weight than the other. Pathologically regarded, this, certainly, is not a legitimate inference. In the investigation of any case of disease, the physician is bound to use every possible source of information, and the circumstances alone must determine their relative value. In the case of children we depend mostly on the accounts of others, and in the case of adults it is not always safe to rely solely on the statements of the patient. Especially is this so in nervous diseases; and in other affections, we know by daily experience how the statements of the patient are warped by his hopes and fears. In mental diseases there are peculiar reasons for resort-

ing to the observation of others. Even when communicative, patients may labour under a derangement of perception and a confusion of thought, which render their statements quite unreliable. On the other hand, governed by a feeling of suspicion or distrust, they may utterly refuse to converse; or the stress of disease, as in acute dementia, may render them completely dumb. They may entertain gross delusions, and yet be shy of communicating them to strangers; or they may have learned that these are regarded as proofs of insanity, and therefore steadily avoid speaking of them. Sometimes a sudden, momentary fancy or caprice may prompt them to be silent. For the purpose of giving a certificate, we visited a patient lately who, after replying to one or two questions on common topics, declared he should not utter another word, and so he remained dumb. And yet he was stark naked in his room, and for several months had been unequivocally insane, his last performance, only a few minutes before, being to throw his feces in his physician's face. The humblest servant in an asylum knows that many a patient shows his infirmity in his conduct, and seldom, if at all, in his conversation, for the latter may be correct and even shrewd, while the former may abound in folly and be completely at variance with his normal conduct. Indeed one may spend weeks in the wards of a hospital, and in many of the patients still be unable to see insanity in their discourse or deportment. It is time the public were disabused of the idea that insanity may always be detected by going into the patient's room, sitting down by his side, and putting to him a string of questions. That it should be necessary to make a formal protest against such an idea, is a significant comment on the intelligence of the times. We hold, therefore, that the physician is bound, by a proper sense of professional duty, to assert and maintain his right to avail himself, in a case of insanity, of the same sources of information that he would use in any other disease.

This is but one of the many unreasonable notions and practices attributable to that confusion of medical and legal principles so characteristic of the rules of law on questions of insanity. On the supposition that experts possess knowledge in their respective pursuits not shared by others, they are allowed to enlighten the court and jury with their opinions on some matters that involve the merits of the case. It is the acknowledged ignorance of the jury that gives rise to this peculiar kind of evidence; and yet with an inconsistency that fails to excite our surprise only because it is so common, the expert is required to give the grounds of his opinion, or the processes by which he has arrived at it, in order that the jury may judge of its correctness. And thus we have the spectacle, ludicrous were not the consequences often most lamentable, of a dozen men destitute of all scientific knowledge, some of them, perhaps, unable to read or write, sitting in judgment on opinions derived, it may be, from a life-long study of insanity, or chemistry, or surgery. And so in England, the physician who gives a certificate of insanity, must state his reasons for thinking the person insane, in order that all whom it may or may not concern, may judge for themselves whether he is right or wrong. And as if this were not enough to furnish the protection needed, the law prescribes a certain form of certificate; and with a slavish subservience to the letter of the law, which in this case almost literally killeth, it insists upon a conformity to the letter as strict as if it were an indictment for a criminal offence. The physician, we may suppose, after careful inquiry, concludes that the person is clearly insane, certifies accordingly,

and flatters himself that he has accomplished a very satisfactory piece of professional work. Nevertheless, it turns out that he has laboured in vain and spent his strength for nought. The form of the certificate being covered all over with red tape, he has got entangled in its meshes. It seems that the party whose insanity is certified, rejoices in the baptismal names of Matilda Anne, and in one place he has written the latter without the final letter; or, though he has named the street in which she resides, he has neglected to give the number of the house, consequently her detention in an asylum on the strength of his certificate is illegal, and the work must be done over again. We here have been guilty of no such folly as this, but we are not sure that on the whole we have any advantage over our English brethren. Having strictly complied with the law—crossed every *t* and dotted every *i*—they are safe, but our courts are fond of making law for themselves, and the conclusions of the physician may be sacrificed to the whims and prejudices of the judge. We wish that in a work of an authoritative character like this, the supremacy of the medical opinion over all legal technicalities had been unflinchingly maintained. Unless the profession itself asserts on every proper occasion its inalienable rights, we may be quite sure they will never be recognized by others.

While we are obliged to withhold our assent to some of the views expressed in this chapter, we willingly commend it as, on the whole, an excellent exposition of the various subjects of which it treats. The account of the various forms of insanity, though somewhat supplementary to that of Dr. Tuke, will not be regarded by the reader as unnecessary, but will be welcomed and appreciated. For such help as the practitioner can derive from books in detecting insanity when concealed, exposing simulation when practised, and arriving at a correct conclusion in cases of questionable impairment, he can avail himself of no better source of instruction. On the subject of simulation we wish more stress had been laid on what, for lack of a better name, we may call the physiognomy of insanity, meaning thereby the look, the mien, the bearing, the turn of expression, the succession of thought, the blending of the real and the unreal, of the subjective and the objective, and the *abandon* which marks the utterance of extravagance and folly. Impossible as it is to render such traits cognizable to others by any art of description, who that has been long familiar with the insane has not often found in them, in the absence of other evidence, unmistakable proof of mental disease? They cannot be imitated, even by the most ingenious mimic, and indeed the attempt is never made. This internal evidence, as we may justly consider it, may not be available to the ordinary practitioner, but to the expert its value can be scarcely overestimated, and therefore we regret that it is not clearly recognized in a work of this description. The courts may not treat it with much respect, but that furnishes an additional reason why we should persist in claiming for it all the authority it deserves.

Dr. Bucknill devotes several pages to what is called the insane diathesis, or insane temperament, or insane neurosis, by which various names recent writers have designated that inherited quality of the brain which constitutes, in most cases, the first step in the evolution of that morbid condition which we call insanity. It is justly entitled to all the attention he gives it; and much more, indeed, would not have been misplaced, for we believe that no other subject connected with insanity has provoked inquiries and led to consequences of equal importance, during the last thirty

or forty years. The hereditary character of insanity, to some extent, has been always recognized, but until quite recently nobody troubled himself to inquire what became of the morbid element before its presence in the offspring was revealed by demonstrative symptoms. Whether it always remains in the system utterly innocuous, or frequently imparts a peculiar character to the mental manifestations, were questions never asked until a very recent period. Of course its presence is implied in the fact of hereditary transmission, and it is consistent with all the analogies of diseased action that it should affect the character and conduct of the individual, sometimes more, sometimes less, according to its organic conditions, and according as circumstances of life may serve to develop its activity. To ignore it entirely would be no more a mark of wisdom than it would be to ignore any other abnormal condition; and in many instances, certainly, it would be like acting the play with the part of Hamlet left out. In diagnosis, prognosis, and treatment, it must always present a consideration of the highest importance, furnishing a clew to many a mystery in the patient's conduct, and determining his special management and pursuits. Its influence on the character, its relations to unequivocal disease, its rise and progress, are matters which promise a rich reward to the careful inquirer, for they are as yet far from being well understood.

The chapter on the *Pathology of Insanity* by Dr. Bucknill, with some additions on *Histology*, by Dr. J. Batty Tuke, presents a very full and fair record of the labours of pathologists during the last ten or fifteen years, on the organic conditions of the brain. It is necessary to the completeness of a manual like this, and the task has been thoroughly and discriminately performed. The record shows that, during the period in question, cerebral pathology has been the subject of much minute and comprehensive investigation, of many new facts, and of much ingenious speculation. How much of all this is destined to take its place among the assured and permanent results, remains to be seen. We know that inquirers in the same paths have not all arrived at the same conclusions, that the revelations of the microscope have been differently interpreted by different observers, and that the speculations have often been more subtle than wise. But with all our misgivings as to the present or prospective worth of what has been done so far, it can scarcely be denied that some sure, substantial advance has been made beyond the ideas of Pinel, who was strongly disposed to doubt whether insanity was any disease of the brain at all. We know better the significance of the lesions found after death in the brains of the insane, and nobody doubts, we imagine, that the essential, indispensable change takes place prior to all these, which have only an incidental connection with it. At the very least, if we have actually found nothing, we burn, as the children say.

It would be hardly worth our while to examine the newest theories respecting the proximate cause of insanity, and discuss the current question whether it is to be found in defective condition of the nerve cell, or of the vessels by which it is nourished, because neither explanation seems to account for all the facts in the case. The favourite theory just now that insanity is caused by defective nutrition of the nerve cell, plausible as it may seem on a limited view of the matter, fails as a rule of general application. Any theory ought to explain the phenomena of sleep, and yet it is commonly supposed that, in this state, cerebral nutrition is going on with the greatest activity. The phenomena of drunkenness,

too, must be attributable to some organic movement very like that in which mania originates, but who is prepared to say that the former springs from defective nutrition of the brain? It must be admitted that the theories respecting the primary organic condition, now most in vogue, have in them a strong element of speculation, and that until they have a larger basis of well-demonstrated facts, they must be regarded with considerable distrust. Not that we would discourage such inquiries, or repress the freest speculation, because, however uncertain may be their results thus far, yet if we ever arrive at the truth, it must be by their means.

Dr. Batty Tuke is peculiarly well qualified for his contribution to the work, and he has well prepared it. His microscopic examinations have been very numerous, and they will prove a valuable aid to the student in prosecuting his studies in this direction. Some of the microscopic appearances are represented by coloured engravings. All this, of course, is new matter, for the achievements of the microscope in cerebral histology have been made within the last fifteen years or less. Unquestionably, they indicate the field on which all future discovery must be made. The scalpel has had its day, and though its work has been indispensable in the search for a correct pathology, and therefore never to be entirely abandoned, yet the solution of the problem so long and so anxiously sought, must be achieved, if ever, by the microscope. But the acknowledged difficulty of making the examination and the liability to mistake forbid us to expect this event very soon. A period of imperfection, discrepancy, and conflict must precede that of uniformity and harmony, and many a fine theory will have to go under before we arrive at unquestionable results.

To the practising physician the chapter on *Treatment* will be of more interest than any other, for the simple reason that to cure the disease or to mitigate its evils, is more desirable than to know exactly what caused it, or what the ancients thought about it. If he expects to find, as one of the results of recent inquiry, that insanity is more amenable to medication than it was when the last edition of this work was published, we fear he will be disappointed. He will find that we are still without a specific, and that the lack of uniformity of treatment is as great and embarrassing as ever. He will find that modes of treatment supposed to exert some specific action on the disease are no longer proposed, and that medication is guided by the light of an accidental experience, and of indications derived from other organs than the brain. When the various ailments that usually accompany an attack of acute mania have disappeared; when the patient has become calm, the appetite good, the secretions healthy, and sleep not very deficient; with what drug is the physician to combat the only, but the essential, ailment that remains? Nobody pretends to answer this question, though we hear much about insanity being a lesion or change of organic structure, and therefore to be treated by drugs like other diseases. Still, it must be admitted that our medication is better than it once was. If we have found no specific for insanity, we have much less of that mischievous or senseless practice which has been common enough even in our own day. If we have seen the folly of bloodletting, purgation, and submersion, we have a right to rejoice in opium, chloral, and the bromides. These last named articles, as well as many others of less importance, are very satisfactorily discussed, and we have only words of commendation for the remarks on asylums, diet, jour-

neys, and moral treatment generally, with a single exception. On the subject of mechanical restraint, American physicians having charge of the insane, differ from their English brethren, *toto cælo*. The latter, for the most part, believe that it is wholly mischievous, directly and indirectly; that it aggravates the evil it is intended to relieve; and that any good it is supposed to effect can be better obtained by the hands or eyes of attendants, or by seclusion. On the other hand, we here believe that it accomplishes the desired purpose more effectively than any other means; that the constant presence and interference of attendants, excite irritation and provoke resistance; and that they often fail to secure the intended object. We do not propose to consider this question now. It has been thoroughly discussed already, and if what has been said has failed to produce conviction on one side or the other, no repetition of it will be likely to succeed. The right, no doubt, will finally prevail. Murmurs of distrust, slight shows of resistance, now occasionally witnessed, will be followed at no distant period, probably, by free and vigorous opposition to the system of the total disuse of restraint. We will only take the opportunity to bear our testimony against the spirit of intolerance which has characterized the discussion of this question, on the part of the officers of English asylums, and remind them that it is one on which an honest difference of opinion may exist, as much entitled to respectful treatment as any other diversity of practice or precept. We would not have it supposed, that the last remark has been suggested by any manifestations of this objectionable spirit in the present work, for it is quite free from them.

Our limits oblige us to pass by several points we would like to speak of, but our purpose will have been answered if we induce the reader to make himself acquainted, by a careful perusal, with this sound, thorough, judicious work.

I. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XVII.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Volume the Fifty-sixth. 8vo. pp. lxxviii., 492. London: Longmans, Green, Reader, & Dyer, 1873.

THE present volume of this admirable series contains twenty-two papers, of which we shall, according to custom, offer our readers a short account, taking up first the surgical communications, and grouping together the medical papers for after-consideration.

The first article in the volume is *On Non-purulent Catarrh of the Middle Ear*, by WILLIAM BARTLETT DALBY, F.R.C.S., M.B. Cantab., etc. This is principally founded upon notes of cases treated by Mr. Dalby at St. George's Hospital, and abstracts of twenty, which the author looks upon as typical cases, are given in an appendix. The remedies chiefly employed appear to have been repeated inflations of the tympanum, either by Politzer's method or through the Eustachian catheter, and the introduction of warm solutions of bicarbonate of soda, muriate of ammonia, or iodide of potassium, or of iodine vapour, or simply warm water, sometimes by the catheter, but more commonly by a modification of the simple method known as Gruber's. Hinton's plan of incising the membrane, and washing out the cavity of the tympanum by injecting solutions from the meatus inwards, is regarded by Mr. Dalby as only serviceable in exceptional instances. From a review of all his cases the author concludes that in cases of obstruction of the Eustachian tube, when the tympana are not involved, recovery may be expected, as it may be likewise when catarrhal affections of the tympana are treated at an early stage. When, however, the secretion has become inspissated before the patient applies for relief, and only dry sounds are heard on inflation of the tympanum, there is, in most instances, but little prospect of a satisfactory result.

The second paper is a *Case of Ovarian Dropsy operated on during an attack of Acute Peritonitis*; by RICHARD T. TRACY, M.D., etc. An abstract of Dr. Tracy's paper appeared in the Quarterly Summary of this Journal for January, 1873, page 267.

A *Fifth Series of One Hundred Cases, with Remarks on the Results of Five Hundred Cases of Ovariectomy*, is contributed by T. SPENCER WELLS, F.R.C.S., etc. From his very large personal experience in ovariectomy, Mr. Wells draws, in this paper, certain important conclusions as to the various circumstances which exercise a favourable or an unfavourable influence on the results of the operation. Comparing his *hospital* with his *private* cases, he finds that the numbers are nearly equal, and that the mortality of the former has been 26.66 as against 24.23 per cent. of the latter, thus showing a difference of only 2.43 per cent. in favour of cases treated in private practice. For limited periods of time, however, the proportion has occasionally been very different, the mortality of hospital operations having been in one series of a hundred cases more than double that met with in private patients. In seeking for the causes of this variation:—

"It has become manifest that periods of high and low mortality have corresponded with varying sanitary conditions in the hospital, or with the presence of infecting cases in some ward. After emptying the house for a month or longer, thoroughly cleansing, painting, and lime-whiting the wards, a period of almost uninterrupted success has followed. Then what some call 'a run of bad luck' set in, attributable, I believe, to crowding, to some neglect in purifying bedding, or to contagion or infection. . . . My conviction is, that the surgeon who hopes to obtain better results than have hitherto been obtained, must place his patient, whether in hospital or private practice, as nearly as he can in the position of a person in a private house—in a healthy situation, in a room where ventilation is sufficient and continual, but not excessive, and the temperature is under proper regulation; all unnecessary furniture (such as woollen carpets and curtains) removed; all bedding and clothing being perfectly clean and free from any taint of morbid poison; and the patient having the undivided attention of one trustworthy nurse for several days after operation."

The *season of the year* at which the operation is performed, and the *conjugal condition* of the patient, appear to exercise little or no influence on the result; whereas the *age* of the patient is a matter for serious consideration. Mr. Wells's statistics show that patients under 20, and those over 60 years of age, almost all recover after ovariectomy, while the highest rate of mortality (33 per cent.) is met with in those between 50 and 55. *Adhesions* to the abdominal parietes, or to the omentum, are found to be of not much importance, but adhesions within the pelvis add greatly to the risks of the operation. The *length of the incision*, as determined by the size, solidity, and weight of the tumour, exercises a marked influence on the result of the operation. When the abdominal wound has not exceeded five inches, the mortality in Mr. Wells's cases has been 21.66 per cent., as against 31.25 per cent. for wounds of six inches; 34.48 per cent. for those of seven inches; 35 per cent. for those of eight inches; 50 per cent. for those of nine inches; and 100 per cent. for incisions of still greater magnitude.

The *treatment of the pedicle* Mr. Wells expects to consider more fully upon another occasion, but he here mentions that his statistics show a mortality of 19.77 per cent. for cases in which the clamp has been employed, as compared with a death-rate of 32.65 per cent. for cases in which the extra-peritoneal method has been otherwise carried out; and of 38.63 per cent. for cases in which the intra-peritoneal method has been resorted to.

With his whole series of 500 cases of completed ovariectomy, Mr. Wells has had to report 52 cases of exploratory incision, or of uncompleted operation. In 19 of these cases death ensued in from one to fifteen days afterwards, while in the remaining 33 the patients were more or less benefited; and in 5 complete recovery was ultimately obtained. Mr. Wells terminates his paper with a calculation, after the manner of Dr. Peaslee, of the number of thousands of years which his operations have added to the aggregate life of the fairer portion of creation; an application of statistics, we must add, which has always impressed us as more ingenious than judicious.

The next paper is a *Case of Subclavian Aneurism, in which Temporary Compression of the Innominate was tried, followed by Ligature of that vessel*; by E. R. BICKERSTETH, F.R.C.S.E., etc. The patient was a dock porter, forty years of age, and the aneurism involved the third and part of the second portion of the right subclavian artery. Mr. Bickersteth employed a modification of Mr. Porter's "artery compressor"¹—itself a modification of Sir Philip Cramp-

¹ The "instrument not unlike a miniature lithotrite," which, by an odd mistake, Mr. Bickersteth describes as Mr. Porter's, is the invention of Dr. L'Estrange,

ton's "*presse-artère*"—introducing, however, India-rubber "accumulators," so as to obtain the benefits which accrue from the use of elastic pressure. This instrument was applied to the innominate artery; but on the morning of the third day the wire which compressed the vessel gave way, and pulsation immediately returned in the aneurism. The wound was thereupon opened, the compressor removed, and ligatures applied one on either side of the point of compression. Secondary hemorrhage began six days after this second operation, and recurred at intervals until the death of the patient twenty-five hours subsequently. A *post-mortem* examination showed that the innominate artery was occluded on the cardiac, but not on the distal side of the ligatures, while the sac of the aneurism was filled with laminated clot, and a clot also occupied, though it did not fill, the subclavian and axillary arteries beyond the position of the aneurism; the subclavian and innominate arteries between the aneurism and the ligature, and the carotid artery, were entirely empty. The fatal hemorrhage had proceeded from the distal side of the external ligature.

This case, studied in connection with Mr. Porter's, seems to us to show that acupressure and its modifications are ill-suited for the treatment of subclavian aneurism. In Mr. Porter's case the pressure caused sloughing of the artery, with consequent fatal hemorrhage, and in Mr. Bickersteth's case, though compression was maintained for forty-five hours, the aneurism pulsed as forcibly as ever the moment the pressure was removed. This case seems to us also to furnish a strong argument in favour of the mode of treatment suggested by Sir Wm. Fergusson, and happily put in practice by Prof. Spence, viz., amputation at the shoulder-joint as a modified distal operation: it will be observed that though, at the autopsy, the arteries between the aneurism and the ligatures were found empty, the aneurismal sac itself was filled with laminated clot, and the artery on its distal side was nearly, though not quite, occluded; now is it not obvious that if, instead of applying a ligature to the innominate, the axillary artery had been secured, the physiological demand for a blood-current through the aneurism being at the same time removed by amputation of the upper extremity, there would have been every reason to expect a successful result, without there being any risk of the secondary hemorrhage which almost inevitably follows the use of the proximal ligature in cases of this nature? If any operation at all is to be practised on the cardiac side of an aneurism involving the third and second parts of the subclavian artery, an attempt should, we think, be made to secure the obliteration of the vessel by the use of such an instrument as that devised by Dr. Speir, of New York; an instrument which, without endangering the integrity of the outer coat of the artery, severs its inner coats, and thus permits the occurrence of that retraction and contraction which are so essential in nature's method of accomplishing the desired object.

We next turn to an interesting account of a case of *Removal of a Needle from the Heart; Recovery of the Patient*; by GEORGE WILLIAM CALLENDER, F.R.S., etc. The patient, a man thirty-one years old, after a struggle in a tavern, missed a needle which he had placed in the left side of his coat, and nine days subsequently came under Mr. Callender's care, complaining of "beating" of the heart, and of constant pain extending from the left nipple towards the

and is figured as such in Mr. Porter's paper, to which Mr. B. refers (*Dub. Quart. Journ. of Med. Sci.*, Nov. 1867, p. 275). Mr. Porter's own invention is figured in Mr. Stokes's paper on Temporary Deligation of the Aorta, in the number of the same Journal for August, 1869. Crampton's instrument, which modern inventors seem to have agreed to ignore altogether, is described and figured in the *Med.-Chir. Trans.*, vol. vii. (1816), p. 365.

axilla, and down the inner side of the arm as far as the elbow. This pain and a slight fulness and sense of resistance in the fifth intercostal space were the only symptoms present, but were deemed sufficient to warrant an exploratory incision, and, as soon as the skin and superficial fascia had been divided, the extremity of the needle was distinctly felt. The foreign body moved with each impulse of the heart, describing a double curve, and was thus evidently fixed in the heart itself near its apex. Removal was effected without any difficulty, and the patient made a satisfactory recovery, though he was kept in bed for several weeks as a matter of precaution. Mr. Callender appends a table of nineteen cases (twelve of which appear in Fischer's table copied in Holmes's *System of Surgery*, 2d ed., vol. ii. p. 602), in which needles or similar foreign bodies have been removed from, or found after death in, the heart or pericardium, and shows that in none is the evidence satisfactory as to the time during which the foreign body had actually been present in the heart. He hence infers that proof is as yet wanting that life can be prolonged for more than a few weeks after the entrance of such a foreign body into the organ in question, and claims that his own case is "the only instance on record in which a patient has recovered after the removal by a surgical operation of a needle from the heart."

A Case of Excision of the Knee-joint for Disease in a Woman fifty-three years of age, with successful result, is the subject of the next communication, which is contributed by FREDERICK JAMES GANT, F.R.C.S., etc. The patient who was the subject of this operation had suffered more or less continuously for twenty-three years from rheumatoid arthritis of the left knee, the limb at the end of that time being almost useless, with fibrous ankylosis and subluxation of the joint. An attack of phlegmonous erysipelas delayed but did not ultimately prevent convalescence after the operation, and five and a half months subsequently the patient was able to walk with the aid of a stick.

The next paper gives an account of a *Successful Case of Gastrotomy in Extra-uterine Pregnancy*; by LAWSON TAIT, F.R.C.S. Ed. and Eng., etc. The patient was 29 years old, and had been married two years. She ceased to menstruate about September, 1871, and from the middle of March until July 20th, 1872, felt distinct movements of the fœtus, a slight bloody discharge appearing at the latter date, and all movements ceasing from that time. When she came under Mr. Tait's care in September, 1872, the lower third of the abdomen was completely occupied by a tumour, which was more prominent on the left than on the right side, and at four points (two on each side) there were irregular movable nodules. The patient said that her size had gradually diminished during the last two months. The uterus was rather larger than in its normal condition, soft, and somewhat fixed; had an open cervix; and did not move with the tumour. By rectal exploration a hard semilunar ridge could be readily felt behind the uterus. No information could be gained by either abdominal or vaginal auscultation.

Gastrotomy, or as it should rather be called *Laparotomy*, was resorted to on Nov. 2d (nearly four months, therefore, after term), the peritoneal cavity being opened as in the operation of ovariectomy, when it was found that the roof of the sac joined the parietal peritoneum about three inches above the pubis. The sac having been opened with precautions against the escape of fluid into the cavity of the abdomen, the legs and trunk of the fœtus were readily extracted; but its head, which was deeply packed into the pelvis, and adherent, was removed with great difficulty, a considerable quantity of hair indeed remaining and being subsequently picked out during the gradual closing of the sac. The umbilical cord was divided about its middle, and the placental portion allowed to hang out of the wound. The placenta, which was attached

to the posterior surfaces of the uterus and the left broad ligament, was not interfered with, and the cut edge of the sac was secured to the edges of the external wound by means of a continued suture, the upper half of the wound being then closed by deep silver sutures. The after-treatment consisted in the retention of a siphon in the pelvic cavity, and in frequently washing out the sac with a solution of sulphite of soda. Portions of placenta continued to come away until Nov. 29th, after which the wound gradually healed.

In a previous case in which Mr. Tait operated, the placenta was removed, and the patient died; the successful issue in the present instance he believes to have been due to the fact that, in accordance with Koeberle's recommendation, the placenta was allowed to remain, the peritoneal cavity closed, and the abnormal sac left open. Mr. Tait strongly advises that in similar cases an operation should be resorted to before the liquor amnii has been absorbed, and before, therefore, adhesions have been formed between the foetus and the cyst. A chart is appended to Mr. Tait's paper showing the morning and evening temperature of his patient during the time occupied by the healing of the wound.

We next come to a paper *On Disseminated Suppuration of the Kidney, secondary to certain conditions of Urinary Disturbance*; by WM. HOWSHIP DICKINSON, M.D. Cantab., F.R.C.P., etc. In this paper Dr. Dickinson describes that peculiar condition of the kidney which has recently been so much talked about as the "surgical kidney," and which he believes to be produced by the contact of unhealthy and particularly of ammoniacal urine. A short notice of Dr. Dickinson's communication appeared in the number of this Journal for July, 1873, p. 251, and as in that notice the *clinical* features of the disease in question were chiefly referred to, we shall here direct our attention mainly to its *morbid anatomy*. The pathological appearances in this form of renal disease have been described by Rayer and Brodie, and references to it are to be found in the writings of Mr. Hawkins, Dr. Wilks, and others. Both kidneys are commonly affected, the pelves being dilated, and their mucous surfaces inflamed, often encrusted with phosphatic deposits, and sometimes in a sloughing condition. The cortex of the kidney is usually thinned, its capsule being thickened and abnormally adherent both to the gland structure and to the surrounding fat.

"The glandular condition nearly resembles . . . the renal manifestation of general pyæmia. The kidney becomes swollen and full of blood, much of which remains fluid after death, though some vessels contain clot evidently of ante-mortem origin. The tissue is variegated with blotches and streaks of intense injection; it is soft, friable, discoloured, and prone to decomposition. The cones usually display to the scrutinizing eye sharply defined white lines, which start from the tips of the mamillary processes in the pelvic cavity and pass into or through the cones in the direction of their striation. These streaks look like, what indeed they are, distended tubes, and are important witnesses of perverted action. Close to them swollen bloodvessels are often conspicuous. Next, or possibly without such evidences of chronic change as the swollen tubes give, appear small, softly defined, fawn-coloured patches which streak the cortex from cones to capsule, or take the shape of wedges with the base against the capsule, the point entering the medullary tissue. These are at first scarcely less hard though more friable than the natural substance of the organ. They are surrounded and intermingled with vascularity. As the disease progresses they become large, irregular, and confluent, soften in their centres into ordinary liquid pus, and finally take the shape of scattered abscesses, varying from mere points up to the size of peas or even larger. . . .

"Passing to detail, and taking the straight tubes first as the parts of the organ first affected, these as they converge upon their outlets are often strikingly

dilated, apparently from the backward pressure of the retained urine . . . They are variously occupied by saline matter, purulent secretion, fibrin, or epithelial growth . . . The change does not extend to the convoluted tubes, which remain for the most part natural. The veins which appear to be next involved in the disease, are generally distended with blood. The straight veins of the cones often display in section a partial distension which is probably the result of coagulation which has occurred during life. The large veins of the cortex are often similarly filled, and it sometimes happens that the arteries which pass in companionship with them are likewise permanently occupied. As a general rule, however, the arteries are natural, as also are the Malpighian vessels. The venous position of the clot in the condition under consideration differs from the similar result of ordinary pyæmia, in that the obstruction there is essentially arterial. The third stage of the disease is the scattered suppuration which is the most obvious result of the complicated process. The disseminated abscesses, or regions of cellular infiltration, antecedent to abscesses, are intertubular, and have relation to the course of the veins. . . . The Malpighian bodies remain unaffected by the disease, though the adventitious corpuscular formation often collects abundantly outside them. . . .

"Taking the structural changes in their mutual relation, the dilatation of the tubular exits, the morbid occupation of the veins, and the general absence of signs of tubal inflammation, the nature of the process is clear. This disorder has its origin in the regurgitation of urine charged with morbid products. This, forced backwards by the retention general in these cases, distends or occupies the straight ducts. Thence by transudation, or similarly, it enters the neighbouring bloodvessels, and charges them with an infection resembling in its results that of pyæmia. This is distributed by the veins to the rest of the gland, sowing abscesses in their course, and ultimately causing constitutional symptoms analogous to those of pyæmia otherwise derived. The condition of the kidney may be described as one of pyæmia arising within itself."

Dr. Dickinson suggests the name *uriseptic* as applicable to this form of renal suppuration; as the disease appears to result from the retention of ammoniacal and putrid urine, he advises that an attempt should be made to restore the normal reaction of this fluid by the internal administration of mineral acids, and suggests in addition the employment of carbolic acid or other antiseptic by injection into the bladder. Two finely executed coloured plates accompany this paper and illustrate the microscopic appearances described in the text.

We shall next invite our readers' attention to an elaborate paper *On the Infective Product of Acute Inflammation*; by J. BURDON SANDERSON, M.D., F.R.S., etc. The purpose of this paper, as stated by its author, is to show, (1) that in all acute suppurative inflammations the exudation liquids exhibit poisonous or infective properties when introduced either into the circulation, the serous cavities, or the areolar tissue; (2) that these properties are manifested in two ways, viz., in the elevation of the bodily temperature and in the production of secondary inflammations; (3) that the increase in temperature results directly from the presence of the poisonous or infective agent in the blood; and (4) that the secondary inflammations may be acute or chronic, the former differing from the latter both in respect of duration and as regards their anatomical characters.

"The author arrives at no conclusion as to the nature of the substance to which the pyogenic property of exudation liquids is due. In the acute process, attended with pyrexia and the development of secondary inflammations of great intensity, there is evidence to show that we have to do with septic decomposition; not only in the fact that bacteria are present, both at the foci of inflammation and in the blood, but also in the perfect identity of the symptoms with those of septicæmia. It is not, however, as yet proved that in chronic infection the irritant is of the same nature; for, although there are all gradations between septicæmic infections of the most rapid development, and slow processes

of tuberculosis, this gradation in itself affords no evidence that the two are dependent on the same material cause."

Dr. Sanderson divides his paper into three parts, in the *first* discussing the nature of the inflammatory process, with a view to the consideration of the mode in which a primary inflammation gives rise on the one hand to fever, and on the other to secondary inflammations; in the *second* giving an account of certain preliminary inquiries conducted by himself in the year 1867-68; and in the *third* describing experiments made by Dr. E. Klein and himself in 1872, and detailing the conclusions derived therefrom. Our space does not admit of our giving a complete analysis of Dr. Sanderson's very able paper, and indeed it is hardly necessary that we should do so, for much of what is here recapitulated is already familiar to American surgeons from the author's well-known essay on the process of inflammation, in the last edition of Holmes's *System of Surgery*, and from his equally well-known communication to the London Pathological Society, an abstract of which appeared in the number of this Journal for July, 1872, pp. 253-257; we shall therefore content ourselves with giving the conclusions which result from his more recent experiments, referring our readers to the original paper for full details of the experiments themselves.

"It has been shown," says Dr. Sanderson, "(1) that that combination of malignant fever with intense and destructive inflammation to which pathologists have rightly applied the term septicæmia, because it is known by experiment as well as by clinical observation to result from the existence in the blood of putrescent albuminous matter, may also be produced by the introduction, into the circulation or into the serous cavities, of small quantities of liquids derived directly from living tissues in certain states of inflammation; and that such states have the same distinctive characters as those which distinguish inflammation of septicæmic origin. (2) That pyæmia (the term being understood to denote a general febrile disorder of less virulence than that of septicæmia, accompanied by numerous disseminated inflammations, characterized chiefly by their proneness to suppuration) is so closely related to septicæmia as regards its origin and essential nature that in these respects no line of distinction can be drawn between them; and that pyæmia, like septicæmia, may originate from a purely traumatic inflammation, independently of any infection with contagium derived from a previously existing pyæmic inflammation. (3) That both of these conditions are characterized by the existence of microzymes in the infected liquids; and that the relation of intensity between different cases of septicæmia and pyæmic infection is indicated by the number and character of these organisms; so that in the most intense processes (*i. e.* those which exhibit the characters of septicæmia), the exudation liquids and the blood are crowded with actively moving bacteria, while in the more chronic processes, the spheroidal and dumb-bell forms prevail, and the numbers of organisms found in the liquids are relatively inconsiderable."

These microzymes Dr. Sanderson believes to originate from external sources, but, he adds:—

"Even if the extrinsic origin of microzymes were proved, it would afford no ground for concluding that the origin of the contagium itself is also extrinsic. It does not at all follow because these organisms come in from outside that they bring contagium along with them; for it may be readily admitted that they may serve as carriers of infection from diseased to healthy parts, or from diseased to healthy individuals, and yet be utterly devoid of any power of themselves originating the contagium they convey."

The last of the surgical papers contained in the present volume is a *Case of Abdominal Aneurism successfully treated by Proximal Pressure of the Aorta*; by EDWARD HEADLAM GREENHOW, M.D., F.R.S., etc. The essential features of this case, which was one of much interest, have been already laid before our readers in the number of this Journal for October, 1873, pp. 548-550.

J. A., JR.

We shall next invite attention to the medical papers in the volume. *On the Morbid Effect of Alcohol, as shown in Persons who trade in Liquor*; by WM. HOWSHIP DICKINSON.—This communication is very fully noticed in the January number of this Journal for last year.

On the Respiratory Movements in Man, with an Account of a new Instrument for measuring the Movements of the Chest; by ARTHUR RANSOME, M.D. etc.—The various modes of measuring the movements of the chest in use simply give either the gross enlargement of the circumference of the chest, or the resultant of the movements of its different parts, without estimating their extent in the upward, forward, and outward directions. To supply this want Dr. Ransome has invented a very ingenious instrument the description of which we will not transfer to these pages, because it would be unintelligible without the diagrams that accompany it. In regard to the order of movement of the ribs in inspiration, the author says his experiments have convinced him that the lower ribs are the first to move, and that the movements of the second ribs are less extensive than those of the fifth, as might have been expected from the greater length of the latter bone; but they are also much less acute, and more equable in their rise and fall, showing that the work done by the upper ribs is performed more gradually and that these remain at the point of extreme expansion rather longer than the lower ribs. The amount of movement varies in different cases, being greater in children than in adults. It will also vary with the position of the person undergoing examination, but there is not so much difference between men and women in the extent of movement of the upper part of the chest, especially upon forced breathing, as had been supposed. In a large proportion of the men examined, it was found the movements on the right side of the chest exceeded those on the left; in most of the women, on the contrary, the motions of the left side were greater than those of the right side. As a rule, the movements of respiration are much less extensive in disease than in health, except where one side has undergone an enlargement to compensate for loss of breathing room on the other. In some cases the movement upwards are exaggerated. Diminished motion will be observed in patients suffering from the following diseases: emphysema, asthma, phthisis, chronic bronchitis, and acute inflammations of the lungs and pleural membrane. The paper is illustrated by numerous diagrams.

Progressive Muscular Atrophy accompanied by Muscular Rigidity and Contraction of the Joints; communicated by SIR WILLIAM GULL, Bart., M.D., F.R.S.—The principal interest in this case is connected with the examination of the nervous centres, which was made by Dr. J. Lockhart Clarke. The changes in the brain seem to have been unimportant. The white substance was found interspersed with corpora amylacea, varying from about twice the diameter of a blood disk to fourteen times that size. A few of these bodies were also scattered throughout the gray substance, but they were confined chiefly to the deeper layers. The cells of the gray substance were not altogether healthy. Some of them had lost their natural sharpness of outline. Others contained rather more pigment than usual, or were somewhat granular at their surfaces. The pons Varolii, the medulla oblongata, and spinal cord were all notably diminished in size, and were the subjects of degenerative changes. Corpora amylacea were scattered thickly throughout the substance of the first two, particularly in the white substance. Moreover, the nuclei of the following nerves: the abducens and the facial, the trigeminus, the hypoglossal, the spinal accessory, and vagus, had undergone more or less pigmentary degeneration. The bloodvessels of the medulla oblongata were much dilated. In some instances they had wholly disappeared, leaving large empty and smooth walled

tubular spaces. In the spinal cord, the gray substance from one end to the other was severely damaged by a variety of lesions and degenerations. In the upper cervical region on a level with the second and third pair of nerves, all the white columns were much congested; the connective tissue between their fibres was greatly hypertrophied. In the left lateral half of the gray substance a large triangular and somewhat transparent area of disintegration was found in the interior of the anterior cornu, leaving only a wall of healthy and darker tissue around it. This morbid area consisted only of small remnants of partially disintegrated gray substance, irregularly connected with one another, and forming together a kind of reticular or honey-comb structure. On the right side, a large area of transparent disintegration involved the whole outer half of the anterior cornu, and reached as far back as the projecting group of cells which Dr. Clarke has named the tractus intermedio-lateralis, and which is connected with the lower rootlets of the spinal accessory nerve. Extending into this track was a large hemorrhagic clot. Two other clots were formed in the neighbourhood of the first. Similar changes were discovered in the lower part of the cord, but we have not sufficient space at our command to particularize them.

The symptoms presented by the patient are very clearly explained by the morbid changes that were found in the medulla oblongata and spinal cord. The embarrassed articulation, the nasal character of the voice, the difficulty in swallowing, and the constant escape of saliva from the mouth, resemble the group of symptoms which constitutes glosso-labio-laryngeal paralysis, and are explained by the morbid changes found in the nuclei of the facial, hypoglossal, vagus and spinal accessory nerves. The great feebleness of the respiratory movements is accounted for by the lesions that were found in the anterior and lateral gray substance of the cervical and dorsal regions of the cord. The same progressive lesion of the anterior gray substances in the dorsal and lumbar regions of course explains the paralysis of the upper and lower extremities, and the decided sclerosis of the antero-lateral columns accounts for the stiffness and contraction of the joints.

A plate accompanies this paper.

The Pathology of Chronic Bright's Disease with contracted Kidney, with especial reference to the Theory of Arterio-Capillary Fibrosis; by GEORGE JOHNSON, M.D., F.R.S., etc.—Dr. Johnson's views of the nature of the changes in the form of Bright's disease characterized by contraction of the kidney are pretty generally known and were noticed in the 57th and 67th volumes of this Journal. We, therefore, propose at present to call attention only to those parts of his communication in which the opinions of Drs. Gull and Sutton, on the pathology of this disease (see April number of this Journal for 1873) are criticized. An examination of the specimens convinced Dr. Johnson, of the correctness of his first impression, that the hyaline fibroid appearance is not an indication of a pathological change occurring during life, but a *post-mortem* physical result of the imbibition of fluid by the coats of the vessels. He has never been able to detect the hyaline thickening of the external fibrous tunic in vessels examined immediately after removal from the body. It is almost always seen if the vessel, no matter what may have been the cause of death, has been immersed for some time in glycerine and camphor water, and is never seen if the preservative fluid employed be either spirit, or a solution of common salt of sp. gr. 1030. With regard to the physical conditions which favour the imbibition of fluid by the fibrous tunic of the arteries, he says, it is certain, the process is quickened by acidity of the fluid and prevented by its alkalinity. In his collection are specimens of normal arteries from the same subject, one set preserved

in an acid fluid having the fibrous tunic distended and hyaline; the others, after being distended by the acid, have been made to shrink, and again assume the fibrous character by the addition of ammonia. He thinks it not unlikely that, thickening of the fibrous tunic may sometimes occur in the vessel of the pia mater, as a result of *post-mortem* maceration in the sub-arachnoid fluid. The glycerine fluid, by distending the fibrous tunic, often presses the muscular coat more or less irregularly inwards so as to narrow the canal of the artery; frequently, too, he adds, it appears to fuse together the muscular elements, rendering them indistinct and giving the thickened wall of the artery a homogeneous or a granular appearance.

An Analysis of Ship Air and its Effects; by ALEXANDER RATTRAY, M.D., Edinburgh.—Many causes combine to render the air of ships more impure than that of houses or hammocks, and chief among them is overcrowding with deficient ventilation. While the soldier has at least 600 cubic feet of sleeping room, and from 1500 to 1800 in the tropics, the crew proper of a frigate really have no more than 63 in the densely crowded lower decks at meals, and from 105 to 222 at night on the sleeping decks. The amount of space allotted to the cadets and officers, although larger, is also insufficient for the requirements of respiration. The principal impurities which Dr. Rattray found in the air of ships were carbonic acid, sulphuretted hydrogen, ammonia, watery vapours, and organic matter. These are derived from the lungs and skin of the crew, from the ship itself, from the stores, from gun-firing, and from sea spray.

The evil results of being subjected to this unhealthy influence would be much more marked than they are, were it not that the sailor spends a great part of the day on deck, where he breathes the purest of all airs. To the bad effects of foul air of ships the author, however, attributes the low average age of seamen, and their predisposition to scrofula and phthisis. He, therefore, dwells upon the importance of securing for every vessel the best and most efficient means of ventilation. The paper is illustrated by a plate representing, 1st, fine dust from lower deck; 2d, living acari from lower deck, night air; 3d, small round and oval bodies in lower deck, night air; 4th, blood from erysipelatous leg containing animalcules.

A Second Report on the Communication of Syphilis in the Practice of Vaccination, with two additional cases; by JONATHAN HUTCHINSON, F.R.C.S.—A very full abstract of this interesting paper will be found in the number of this Journal for April, 1873.

On three Peculiar Cases of Molluscum Fibrosum in Children; by JOHN MURRAY, M.D., communicated by Thomas Smith, F.R.C.S.

Report of a Case of Molluscum Fibrosum or Fibroma, with Remarks; by GEORGE POLLOCK, F.R.C.S.

The three cases reported in the first of these papers are certainly peculiar as well as interesting, and were it not that Mr. Jonathan Hutchinson and Dr. Tilbury Fox agree with Dr. Murray in thinking that they belong to the same family group as molluscum fibrosum, we should have some difficulty in regarding them as really instances of this disease. The patients were all children, belonging to the same family, and having been subjected since their birth to the same unhealthy influences. Their parents were first cousins, but both were perfectly healthy, and had an unusually fair family history, being free from inherited or acquired syphilis. In each case the disease was first observed about the time the teeth were cut, manifesting itself primarily in the gums. In regard to the appearance of the gums, the author says, when speaking of the case in which the lesions were most marked: "They are everywhere greatly hypertrophied, and they almost completely bury the teeth. They form in parts numerous

papillomatous or polypoid-looking growths, and in other situations present a peculiar fungating appearance; indeed, this latter characteristic of their growth is at once observed. The enlargement of the gums is most marked at their upper and free surface, where they are mostly flattened out, and in parts hardened by the pressure of the opposing gum. They present the natural colour, and, although they are in parts somewhat soft, vascular, and spongy looking, they mostly feel firm and fibrous to the touch." In the same case the fingers of both hands had undergone a very striking change. "With the exception of the forefinger of the left hand," the author says "the superficial soft structures, at least of the last phalanx of the fingers and nails, are greatly and curiously hypertrophied. The enlargement, density, and appearance of the affected fingers are not at all uniform. The extremity of the finger is much more increased in size in one part than another; the surface is smooth in parts, elsewhere rough and nodular. The smooth portions present here and there a cystic appearance, as if from dilated ducts filled with clear fluid, but on pricking them, blood alone, presenting no abnormal microscopical appearance, escapes, and is not followed by local collapse. The hard and irregular portions appear to be composed to a large extent of hypertrophied epidermic structures, which here and there may be peeled off." The toes were affected in the same way as the fingers, but to a much less extent. On other parts of the patient's body the changes more closely resembled those which characterize molluscum. On the forehead there were four tumours covered by skin, and varying in size from a small pea to a date. They are described as being smooth on the surface, firm, elastic, and pretty freely movable with the skin. They were not painful and apparently not tender to firm pressure. The periosteum beneath one of these growths felt slightly thickened. Similar tumours were situated on the lower aspect of the chin and the left cheek, near the border of the lower jaw. At the junction of the right ala of the nose with the cheek was a small and slightly raised, wart-like body, a *verruca plana*. In the same situation on the left side there was a commencing growth of a similar character. Both ears presented a curious appearance from the existence of prominent growths, chiefly on the anterior aspect of the helix. They numbered altogether about a dozen, and varied in size from a millet-seed to a bean. They were painless, and mostly hard, tough, and fibrous to the touch, and covered with pale, rough and in parts glistening skin. Some of those of the posterior aspect of the arm were softer, more elastic, of a bluish colour, and apparently more vascular, and this is also true of some of the tumours on other parts of the body. On the scalp were four cicatrices, the seat of former tumours, and in the skin of the neck, and in that covering the shoulders and buttocks, numerous white glistening flat elevations were observed. These resembled in appearance smooth warts, varying in size from a pin's head to a shirt button; they were in some instances isolated and distinctly circumscribed, but in others blended together in groups of about a dozen. Notwithstanding the extent of the disease, the patient's general health was excellent. She was, however, almost deaf, and was able to articulate only a few words, and those very indistinctly. In the opinion of the aural surgeons who examined her, the impairment of hearing depended upon a nervous lesion. Inasmuch as the appearances in the two younger children, aged respectively $3\frac{3}{4}$ and 2 years, did not differ materially from those detailed above, we shall not recapitulate them, but proceed at once to give the results of the microscopical examination of one of the tumours removed from the ear. After staining thin sections with carmine, Mr. Henry Arnott found that the epithelial surface was perfectly normal, and that the loose connective tissue supporting the *rete mucosum* was also in no respect different, either in form or in

amount, from that usually met with in this position. Beneath this there was growth of firmer consistence. The bulk of this, constituting the new growth under investigation, was seen to consist of a homogeneous uniformly stained substance pervading the mass in irregularly waving broad tracks, which inclosed in their interstices smaller interlacing streaks of the same material, and numerous small cells entangled in this finer meshwork, the proportion of cells to the stroma tissue varying much in different parts of the same section. Certain portions of the tumour bore a close resemblance to cartilage, especially to the cartilage near to forming bone, where, as the result of rapid proliferation, many small cartilage cells are crowded into each enlarged space. From his examination, Mr. Arnott concludes that the tumour belongs to the connective tissue group, its histological elements being partly those of ordinary connective developing into fibrous tissue, and partly those of cartilage.

The author brings his paper to a close with a few remarks in regard to the probable cause of the disease in the three cases. "There are," he says, "two possible factors—either the bad hygienic condition under which the children were born and exposed after birth, or the parental consanguinity, or perhaps both. The eldest child of the family was a fine boy 10 years old, who was born and lived for eighteen months in a comparatively healthy first floor; the three others were born on the ground-floor of the same house; there being no kitchen or cellar beneath the sleeping apartment, which was, according to the positive statements of the parents, excessively and sensibly damp, so that the mattress on which they slept became mouldy. It is at least singular that the three younger members of the family who were all subjected *from birth* to the influence of damp for varying times, were all affected, and the disease was marked in them in a degree corresponding very much with the duration of the exposure. On the other hand, the disease progressed in all the affected children for a long time after they had been removed from the influences in question. Shortly after the paper was read, the mother was delivered of another child, who was perfectly healthy in appearance, except that there were numerous blotches (*nævi materni*) of a bluish colour, chiefly on the scalp and face."

A coloured plate showing the changes in the gums and fingers accompanies this paper.

Mr. Pollock's patient had, as far back as she could recollect, always been the subject of *molluscum fibrosum*. The growths had, however, not only increased in size since her childhood, but had also become more numerous. The photograph which is appended to this paper, shows that the tumours occupied various positions. There were three large ones, the rest, more than one hundred in number, varied in size from a small walnut to that of a split pea or even something less. One of the large ones was attached at the back of the head to the scalp and neck on the right side chiefly, and its size was about that of a small melon. A second growth was connected with the top of the right shoulder. The most remarkable and largest of the tumours was in front. This grew from the right side of the neck, and extended in the shape of a long, thick, and broad pendulous flap of skin to below the level of the navel by an inch or two. The general colour of the skin covering this mass was darker than that of the rest of the body. It was pretty uniformly marked by the orifices of obstructed sebaceous follicles, the contents of which could be pressed out to some length. In a large portion of the mass sensation was impaired. Dr. Whipham, who made a microscopic examination of one of the tumours, reports as follows:—

"The growth, therefore, is due partly to an excessive hypertrophy of the connective tissue of the true skin, and partly to an abundant cell-growth occupying interspaces between the bands of fibrous and elastic tissue, which, as has been shown, composed the chief part of the growth. Neither the large pendulous, nor the smaller sessile tumours depend upon any alteration in the epidermis, rete mucosum, glands, or hair bulbs, as far as can be made out."

The large mass was removed by an operation, and was found to weigh 2 lbs. 6 oz. The patient made a good recovery.

The Pathology of Leprosy; with a note on the Segregation of Lepers in India; by H. V. CARTER, M.D.—The destruction of the cutaneous nerves is regarded by Dr. Carter as the characteristic lesion of leprosy; the alterations of the skin, no matter what their nature may be, being secondary to this. Moreover, he believes the manifestations of the disease are limited to the cutaneous system, saying that in those cases in which the inguinal glands, the nipples, and the testes are observed to be enlarged, inquiry will show that these changes are referable to a syphilitic contamination. The lesions which are really caused by leprosy are "due to exudation or deposit in the skin and nerve-trunks of a firm, translucent, colourless or pale reddish material, which may be distinguished by the borrowed terms 'hyalin-fibroid' and 'hyalin-granular.'" As regards the nerves, this deposit first appears between the individual nerve-tubules and within their common envelope, *i. e.*, the neurilemma of the funiculus; the outer sheath of connective tissue is hardly changed. By accumulation of the new material, the nerve tubes are separated, compressed, and eventually destroyed. The microscopic characters of the leprous deposit, the author continues, favour the view of its being an exudation capable of a low grade of development. At a subsequent stage, fatty or even calcareous degeneration may take place. So extensive is this affection of the cutaneous nerves, that Dr. Carter believes that it may in time involve them all.

He was in no case able to detect any constriction at the point where the nerves pass through the fascia to become cutaneous, which could account for the limitation of the disease. Sooner or later some of the deeper-seated main nerve trunks of compound function become more or less diseased, but the nerves which most frequently suffer, are the ulnar at the elbow and wrist, the popliteal in the ham, the posterior tibial at the ankle, or, in other words, at points where they are most superficial and therefore most likely to be reached by some irritative influence. It is to be noted that not every part of the larger trunks in these instances is impaired, since motor paralysis is rarely present to any extent, even in the worst cases of leprosy. The inferences which the author draws from this are that the sensory element of these compound nerves is alone implicated, and that trophic nerve tubules are commonly associated with those termed sensory.

Dr. Carter looks upon leprosy as a constitutional affection transmissible from parent to child, the tendency to which, however, in a person predisposed being increased by all causes leading to deterioration of health. He does not think that the disease has been proved to be contagious, or that it has been traced to endemic influences. Believing, therefore, that heredity is the common cause of the complaint, he argues that strict segregation of all lepers is the only way effectually to "stamp it out."

A plate showing the microscopic character of the morbid deposit in leprosy is appended to this paper.

On the Elevated Health Resorts of the Southern Hemisphere with Special Reference to South Africa; by E. SYMES THOMPSON, M.D., F.R.C.P., etc. etc.—We shall make no attempt to analyze this paper, which consists mainly of an enumeration of places in Africa, India, Australia, New Zealand, and South America, having claims to be considered "Health Resorts," since Dr. Thompson gives us very little information in regard to either the peculiarities of the climates of these places, or the class of patients it would be proper to send to them.

Preternatural Cavities in the Brain of the Sane and the Insane; by ROBERT BOYD, M.D., F.R.C.P.—Dr. Boyd, in the course of his investigations into the comparative frequency of tumours of the brain in the sane and the insane, was struck with the much greater frequency of an opposite condition, a partial atrophy, in the form of cavities, cysts, and depressions especially in the latter class. Thus these alterations were found in about 40 per 1000 of the sane, and in 47 per 1000 of the insane; whereas tumours of the brain were found in only 18.3 per 1000 of the sane and 16 per 1000 of the insane. A table containing 68 examples of the various forms of cysts is appended to this paper. In regard to the relative frequency of the different forms of cysts, we find that old apoplectic cysts distinguished by permanent blood staining from peroxide of iron were most numerous. Next in number to these were old serous cysts containing clear fluid and without discoloration, often accompanied by cerebral softening and most commonly met with in the insane. Next in order were small porous cavities, from the arrest and cure of ramollissement, all of them occurring in the insane. In two cases, in which there was no mental derangement, encysted abscess of the brain was discovered at the *post-mortem* examination.

Analysis of the Temperature, Pulse, and Respiration in Phthisis and Acute Tuberculization of the Lungs; by WILSON FOX, M.D., F.R.S., etc.—The observations on which this analysis is founded were made in the wards of University College Hospital upon eighty cases of phthisis, occurring, with but few exceptions, in adults who were admitted on account of the acuteness of the disease, its extent, or recent aggravation, and who were discharged, when it did not end fatally, as soon as the more urgent symptoms were alleviated. The disease was also more or less distinctly advanced, and the observations represent, therefore, the symptoms of a group of severe cases, and thus afford no information respecting the earlier stages or periods of comparative quiescence. For the sake of convenience, Dr. Fox divides his cases as follows: 1. Fatal cases. *a.* Acute tuberculosis; *b.* Acute phthisis; *c.* Chronic phthisis. 2. Non-fatal cases. *a.* With high temperature; *b.* With comparatively low temperature. The facts analyzed in the different classes relate chiefly to the following subjects: 1. The maximum temperature observed. 2. The averages of the morning and evening temperatures. 3. The frequency of normal or subnormal morning and evening temperatures. 4. The comparison of the temperature of the morning and evening. 5. The remissions and exacerbations occurring from evening to morning and from morning to evening. 6. Circumstances influencing the pyrexia. The highest ranges of temperature were observed, as a rule, in cases of acute tuberculosis, but the author found that temperatures exceeding 104° occurred in every class except in that in which are grouped cases of low temperature not ending fatally. The maximum temperature which he met with was 106.7° , but it was recorded on only one occasion in a case of acute phthisis. In all the fatal cases, with the exception of eight, the temperatures were higher than in the non-fatal, but a lower range of temperature existed in the cases of chronic phthisis than in the other fatal cases. The occasional exacerbations of fever occurring in the course of chronic phthisis are generally due to the extension, by inflammation, of the pneumonic process. In this way there is often an approximation of the temperature range to that observed in the more acute forms. In many of the cases of chronic phthisis a temperature exceeding 102° was observed. The cases included in the class of "high temperatures not ending fatally," all presented a pneumonic attack supervening on pre-existing phthisis. Their average temperatures were lower than in the other acute cases, owing to the improvement in the symptoms and the subsidence of the pyrexia.

which took place as the result of treatment. The averages of both the morning and evening temperature in cases of "low temperatures" was, of course, below that of any of the other classes, rarely exceeding 100° . In the other classes there was a large number both of morning and evening averages of over 101° . Certain cases are, however, comprised in every class in which the mean of the whole series of morning temperature may be found to be within normal limits. The same fact has also been observed in regard to the evening temperatures, but with comparative rarity, except in the class of the "low temperatures." Morning temperatures, with an average within the normal, were not observed in any of Dr. Fox's cases of acute tuberculosis, but have been met with by others. Averages of the evening temperatures not exceeding 99° were met with by Dr. Fox only in cases of chronic phthisis and the class of "low temperatures." They have, however, occasionally been recorded in cases of acute tuberculosis. In one of the cases of "low temperatures" there was a complete inversion of the regular order, the morning temperature being always higher than in the evening. In this instance and in a few other instances the remission occurred between the morning and evening and not between the evening and morning. The maximum temperatures were usually attained in the evenings, and therefore the average temperature is in the majority higher for the evening than for the morning. In ten per cent. of the cases, however, the maximum temperatures observed in the morning and evening were equal, and in two of these the averages of the morning temperatures observed throughout the case were higher than those of the evening. In nineteen more, or 23.7 per cent., the maximum morning temperature was higher than the maximum evening observed, and in 15 per cent. the means of the morning temperature were higher than those of the evening. It is in the class of "low temperatures" that the higher morning temperatures are more frequently observed. Dr. Fox thinks it not unlikely that in some cases, when the morning temperature exceeds that of the succeeding evening, this may occasionally be due to a midday exacerbation; but inasmuch as very few observations were made by him at noon, he is unable to make an accurate analysis of this point. This explanation is not, however, applicable to those cases in which the morning temperature is higher than that of the preceding evening, and in which a true inversion of the order of exacerbations appears to take place. In a large proportion of cases of phthisis the temperature of the morning, when febrile, is occasionally found to equal that either of the preceding or following evening, and this equality is also observed within the normal range in cases with low degrees of pyrexia, but it is seldom maintained for more than a day. This equality of temperatures in the mornings and evenings, especially when long continued, is therefore generally associated with high pyrexia and with a severe form of the disease. Dr. Fox does not agree, however, with Niemeyer in thinking it more commonly met with in cases of acute tuberculosis than in any of the varieties of phthisis. Remissions occurred in every class. Marked remissions sometimes succeed exacerbations, but they necessarily follow one another, as a continuous or quasi-continuous temperature appears in some cases to be maintained, though generally only during short periods. The maxima recorded in these cases are a remission of 8.8° , and an exacerbation of 8.4° , which immediately succeed one another. Eight cases out of a total of seventy-five, or ten per cent., exhibited in their course remissions exceeding 5° ; and five, or 6.6 per cent., had exacerbations of corresponding extent. These eight cases were divided as follows: Acute tuberculosis, 1; acute phthisis, 3; chronic phthisis, 2; high temperatures, 1; low temperatures, 1. With these exceptions the larger remissions and exacerbations were nearly equally distributed between the fatal

cases of acute tuberculosis, acute and chronic phthisis, and the cases of high temperatures. They also occur in the class of low temperatures not ending fatally, but to a much smaller extent. From this Dr. Fox concludes, with Wunderlich, that from a thermometric point of view there is no feature which can be relied upon as a characteristic to distinguish acute tuberculosis from acute phthisis.

In regard to the cause of the variations of temperature, Dr. Fox says, this is in the majority of instances by no means distinct. He has more frequently than the reverse failed to find any positive evidence of increase of the physical signs following severe exacerbations. In many cases, however, they precede distinct and fresh pneumonic consolidations. In others they are due to rapid and extensive softening, or to intercurrent inflammation. Dr. Ringer was disposed to regard the severity of the fever as the measure of the process of tuberculization, but some cases of acute tuberculosis appear to form exceptions to this position. Pleurisy complicating phthisis may be attended by an elevation of temperature, especially when the effused fluid becomes purulent, but this is not constant; on the other hand, suffocative bronchitis and lardaceous disease of the viscera have generally a tendency to depress the temperature. Marked remissions are produced by diarrhoea, and perforation of the intestines has been observed to be followed by a fall of temperature amounting to collapse. The author has not found that hæmoptysis, even when the amount of this is considerable, exerts any influence on the reduction of temperature, and it is not followed constantly, in his experience, by the exacerbation to which attention was called by Niemeyer. Perspiration appears to be the consequence rather than the cause of the fall in temperature. As in other diseases, the patient's sensations are no guide as to the degree of fever present. The frequency of the pulse bears generally a definite relation to the intensity of the disease, but even in fatal cases it occasionally falls to less than 70° both in the morning and evening. The larger number of the quickest pulses occurs in the morning, which so far confirms Dr. E. Smith's observation, that the rate of the pulse falls after 9 P. M., and rises in the morning. The respiration is also accelerated, usually, also, in proportion to the intensity of the disease; but even in non-fatal cases a considerable number present a mean both of morning and evening respiration above thirty in the minute. No constant ratio can be established between the pulse and temperature, yet cases distinguished by rapidity of pulse are most commonly those where the temperature is highest, and conversely uniformly low pulses exist with low temperatures. Increase of temperature is observed in the evening in a larger proportion of cases than increase of pulse. The relation of the respiration to the pulse is more definite than it is to the temperature, though here also great variations may be observed. Quick breathing may be associated with a slow pulse, and, what is more common, slow breathing, with a rapid pulse. Thus, the ratio, when the breathing is very rapid, may be absolutely reversed, as pulse 72, respiration 78; pulse 76, respiration 96. A very frequent pulse may, on the other hand, increase the ratio of the pulse to the respirations by more than 6 to 1; but this may also exist to a considerable degree when, without a very rapid pulse, the respiration is proportionately retarded, and may even be observed in acute tuberculosis. The pulse respiration ratio is, on the whole, the author thinks, very little influenced by the temperature, though a ratio of the pulse to the respiration of less than 2 to 1 is most common in the "low temperatures," inasmuch as the pulse is more influenced by the temperature than the breathing. In individual cases also great variations may be noticed on different days in the relations of the pulse and respiration. The paper is a very valuable one, and

it is evident that Dr. Fox has taken great pains to make it so. An appendix contains twenty-two tables, wherein the points to which we have alluded in the foregoing notice are very fully analyzed.

J. H. H.

ART. XVIII.—*Saint Bartholomew's Hospital Reports*. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. IX. 8vo. pp. xlv., 258; x., 81. London: Longmans, Green, & Co., 1873.

THIS volume, which (as we learn by a prefatory note) completes the first series of the *Saint Bartholomew's Hospital Reports*, contains, in addition to seventeen distinct articles of scientific interest, short biographical notices of four deceased officers of St. Bartholomew's Medical College, viz., the brothers William and Edward Ormerod, Frederick Carpenter Skey, and Holmes Coote. The sketches of the Ormerods are from the pen of Sir JAMES PAGET, who is perhaps likewise the writer of Skey's and Coote's memoirs, though these are published anonymously. All are well done and full of interest, candid and yet appreciative—models in our judgment of what necrological notices should be. The chief lesson to be learned from the lives of the Ormerods is the value of a strong sense of duty; as their biographer happily expresses it—

“They were very dutiful. Whatever came to be their duty, whether through choice or circumstance, they did it with all their might. Learning or teaching, practice among the poor or among the rich, work for the present or for the future—if it was duty, it was done. And they did not go far away, or take much thought, to find where or what was their duty. It was always at hand, in the common business of their calling, or if beyond this, in the nearest and best work for which they could fairly, or even modestly, think themselves fit. From their devotion to duty, more than from anything else, came their success.”

William Ormerod died when 42 years of age, Edward when 54, and Holmes Coote when 55—Skey alone living to complete his threescore years and ten.

Of the papers devoted to scientific subjects, eight may be classed as surgical and seven as medical, the remainder consisting of the Proceedings of the Abernethian Society for the college year and the Hospital Statistics. Taking up first the surgical portion, we shall now invite our reader's attention to a somewhat lengthy paper, entitled, *Two Years of Hospital Practice*; by GEORGE W. CALLENDER, F.R.S. Many of Mr. Callender's cases are of interest, and his success in treatment has been very great—greater, we venture to think, than he will be likely to find it, should he continue his statistics through a long term of years. The mode of dressing wounds employed by Mr. Callender is already known to our readers from his paper in the sixth volume of the Clinical Society's Transactions, noticed in the number of this Journal for April, 1874 (p. 458). Since the date of Mr. C.'s last published account of his practice, in the fifth volume of the *St. Bartholomew's Hospital Reports* (see No. of this Journal for Jan. 1870, p. 196), Sir James Paget and himself have performed thirty amputations, including twenty-six of the lower extremity, and Mr. Callender has treated conservatively twenty-two cases of compound fracture, including fifteen of the lower extremity, every case in both categories having terminated in recovery. As a contribution toward settling the controversy now in progress among our New York friends, as to the possibility of curing fractured thighs without shortening, we note with interest Mr. Callender's measurements in twenty cases, only four of which gave no shortening—two of these being in children aged five and seven years respectively, and one being a

case in which the fracture involved the inner condyle only, and therefore of course did not diminish the length of the limb. The average amount of shortening in the twenty cases was about three-quarters of an inch.

We must venture to dissent from Mr. Callender's doctrine that, in the treatment of urinary retention due to stricture of the urethra, "in all severe cases . . . no attempt at passing a catheter should be made until the patient has had a warm bath, a full dose of opium, and a purge." On the contrary, we believe, with Sir Henry Thompson, that in the large majority of instances, the catheter—always supposing the practitioner knows how to use that delicate and, in unskilful hands, dangerous instrument—is the proper and the only needful remedy; no doubt it is better to wait than to make a false passage, but it is better not to do either if it can be avoided, and no inconsiderable risk of the supervention of cystitis is incurred by allowing the bladder to remain distended while waiting for the effect of internal medication.

The second of the surgical papers is *A Short Account of some of the Principal Tumours removed at St. Bartholomew's Hospital during the Present Year, with some Remarks on the Growth of Fatty Tumours*; by HENRY TRENTHAM BUTLIN. Mr. Butlin, who is one of the Surgical Registrars of St. Bartholomew's Hospital, opens his paper with a plea for the employment of the word *sarcoma*—a significant circumstance when it is remembered that St. Bartholomew's has been for years the surgical home of Sir James Paget, who has been the most illustrious upholder of what may be called the English as opposed to the German system of classifying morbid growths. The word "sarcoma" is no doubt a convenient one, but it is so chiefly, we think, because it is indefinite, and this very indefiniteness is in our judgment a feature which renders the term objectionable. As used by its originator, or rather its reviver, Virchow, a sarcoma is simply a tumour composed principally of cells, and in which the cells (herein differing from those of carcinoma) are in constant relation to an intercellular substance. In this sense the word sarcoma gives no indication of clinical characteristics, and in a purely anatomical classification of tumours may be properly employed. But when we come to study the subject in the writings of other pathologists, we find confusion worse confounded. Rindfleisch classes among the sarcomata the common uterine fibroid, and declares that he "cannot separate the fibroma from the sarcomas;" Billroth rejects the fibroma, and includes the myxoma which Virchow and Rindfleisch regard as entirely independent; Arnott makes the sarcomata themselves varieties of cancer—in this Mr. Butlin follows him—excludes both fibroma and myxoma, and introduces the glioma, which Rindfleisch thinks merits a name to itself, and which Virchow likewise excludes from the sarcomata, and to which he assigns a place, as it were, midway between the other two. Finally our fellow-countryman Prof. Gross, with a happy disregard of all other authorities, erects the sarcomata into an independent group with definite clinical characteristics, midway between innocent or benign growths on the one hand, and malignant or carcinomatous tumours on the other. After repeated consideration of the whole subject, we confess that the old classification seems to us, in the present state of science, more simple, more definite, and therefore more desirable than the new. Mr. Butlin's observations on the growth of fatty tumours confirm in most respects those published in *Virchow's Archives* by Förster and Von Wittich. His paper is illustrated by means of a well-executed plate.

We come next to *A Case of Severe Suicidal Wound of the Neck*; by CHRISTOPHER S. JEAFFRESON. The patient was a woman 39 years old, and the wound, which was about five inches long, crossed the neck at the middle of the

thyroid cartilage, dividing the larynx completely, and laying the pharynx freely open. The sterno-hyoid, thyro-hyoid, and omo-hyoid muscles were quite, and the sterno-mastoid muscles almost cut through. The carotid arteries had escaped, but there had been profuse hemorrhage from the anterior jugular veins, the superior thyroid arteries, and other smaller vessels. In spite of the severity of her injury, the patient escaped the early dangers which attend such cases, but died at the end of a fortnight from exhaustion. The point of most interest in the treatment of the case was that it was found necessary to administer food through a tube introduced by the wound.

The next paper is entitled *Case of Abscess in the Brain; Pus let out by the Trephine; Complete Recovery*; by LUTHER HOLDEN. Mr. Holden's patient was a lad of 18, who received a compound fracture of the skull by the bursting of an iron bottle which he had filled with water and then placed in the fire. The fracture involved the frontal and left parietal bones, the lower fragment was slightly depressed, and there was an escape of brain matter through the wound. The general symptoms were so mild that no operation was resorted to, and in two months the boy was made an out-patient, and four months later returned to his work, the wound having ultimately healed after the exfoliation of several small portions of bone. After having been at work six months he met with a bad fall, as a consequence of which he was laid up for three weeks with repeated convulsions of an epileptiform character. These convulsions recurred after an interval of five months, and still three months later, or a year and eight months after his original accident, the patient, who had re-entered the hospital, having become almost completely comatose, it was determined to trephine the skull and attempt to evacuate the intra-cranial abscess which was believed to exist. At the time of the operation the patient was entirely insensible. The skull having been exposed, a small hole was found in the frontal bone, and a trephine being applied over this, a disk of bone was removed. As no pus was found, the dura mater was then divided and turned up, when the brain bulged into the opening, feeling tense and elastic. The operation was completed by introducing a bistoury, with the effect of evacuating about five ounces of pus, and of instantly relieving the patient from his grave condition. Convalescence was from this time gradual, but uninterrupted, and the history terminates at a period five months subsequent to the operation, when the patient was in excellent physical health, and with his memory and other intellectual faculties not in any way impaired.

There have now, we believe, been reported seven cases in which pus has been evacuated by the use of the trephine and incisions into the substance of the brain—the various examples, beside Mr. Holden's, being those recorded by Dupuytren, Detmold, Noyes, Clark, Weeds, and Maunder. Of these cases Detmold's was only partially successful, the patient, though temporarily relieved, dying seven weeks subsequently, while as to the result of Maunder's case, we have no information. The other five cases all appear to have terminated in recovery. The cases (and we cannot but believe that there have been such) in which surgeons have resorted to similar operations without benefit, do not seem to have been thought worthy of publication.

The next paper which demands our attention is *On the Treatment of Stricture of the Urethra by Retention of a Catheter*; by W. S. SAVORY, F.R.S. This is an able and well-timed plea in favour of the treatment of urethral stricture by what is known as the method of continuous dilatation. Mr. Savory prefers metallic to flexible instruments, and even carries his preference so far as to recommend that a silver catheter should be chosen when one is to be retained in position. In this respect he gives, we think, bad advice; we believe that

the development of cystitis is often due directly to the irritation produced by the retention of a metallic catheter. On another point we also venture to differ from Mr. Savory; this is as to the correctness of his statement that "for obvious reasons, it (the catheter) must be fairly in the bladder; its eyes must be clear of the prostate, and we must be prepared to make some little allowance in the way of excess in order to secure this." As is well known, the prostatic portion of the urethra is almost never involved in a stricture, and it is quite feasible to fix a catheter so that its beak rests just outside of the bladder, and so that it can be readily pushed in by the patient himself when he wishes to urinate; by this arrangement the risk of cystitis is greatly diminished, while the strictured part of the urethra is occupied by the instrument, and dilatation is as well effected as if the catheter were pushed further in. For this practical suggestion, we must add, we were many years since indebted to Prof. Joseph Pancoast, of Philadelphia.

We turn next to *Cases from the Ophthalmic Wards*; by JAMES H. STOWERS. Mr. Stowers's cases are six in number, viz.: (1) Extensive injury to the eye by strong acetic acid; (2) Lachrymal fistula; (3) Wound of the ciliary region, with partial displacement of the lens; (4) Traumatic dislocation of the lens; (5) Sclero-choroiditis anterior of both eyes; dislocation of left crystalline lens from a blow; and (6) Large vascular sarcomatous growth from the cornea.

The growth in the last case had been previously shaved off from the cornea by Mr. Vernon, but recurred after six months; upon the present occasion a radical cure was effected by extirpation of the eye.

The next paper is *On some Points in the Surgical Treatment of Intra-peritoneal Injuries*; by THOMAS SMITH. Mr. Smith begins by referring to the views of Peaslee, Wells, W. L. Atlee, Sims, and other ovariologists, as to the determining causes of the occurrence of peritonitis after ovariectomy, and particularly as to the dangers of allowing irritating fluids to remain in the peritoneal cavity; he then quotes several cases of successful ovariectomy during the course of acute general peritonitis, and narrates two cases observed by himself of fatal intra-peritoneal injury—death in one having resulted from internal hemorrhage, and in the other from peritonitis following fecal extravasation from rupture of the bowel; the latter case has already been published in the second volume of the Clinical Society's Transactions, and was noticed in the number of this Journal for April, 1870, p. 485. Referring finally to the irritating qualities often observed in the peritoneal fluid, in operations for strangulated hernia, Mr. Smith asks:—

"If it be advantageous in certain conditions, when life is in peril after ovariectomy, to reopen the wound to free the peritoneum from its poisonous contents, to cleanse it, and to keep it clean by repeated antiseptic washings, who shall say, without further experience than we possess, that the same treatment would not be beneficial, under the same conditions, after the operation for hernia. . . . When life is in danger from inflammation and suppuration within a large joint, or the pleural cavity, it is a recognized principle that surgical interference is justifiable. Does any sufficient reason exist why the same rule of practice should not be applied to the treatment of some of the diseases of the peritoneum, when life is in peril from the irritant or poisonous nature of its inflammatory products; and does not the experience of ovariologists at least warrant us in making the experiment?"

There can be no doubt, we think, that the tendency of modern surgery is to enlarge the limits within which operative interference is considered justifiable in cases of intra-peritoneal injury, and it is quite possible that at no distant day the teachings of L  gou  st and other military surgeons upon these points may be generally accepted as correct.

The next paper for our consideration gives the details of *Four Cases of Double Optic Neuritis, with Remarks*; by HENRY POWER. All of Mr. Power's cases are of interest, and the histories of three of them are completed by the results of *post-mortem* examination. In the first case there was paralysis of the fifth and other cerebral nerves, with ulceration of the corneæ ending in destruction of both eyes, and the autopsy revealed the existence of numerous tumours, apparently of syphilitic origin, scattered through the substance of the brain. In the second case there were symptoms of Bright's disease, and after death tumours were found pressing on the anterior part of the right cerebral hemisphere and in the right optic nerve. In the third case the existence of a tumour was suspected, but the patient was still living when last heard of, in September, 1873; and in the fourth case, which occurred in a child nine years old, an autopsy showed the existence of tuberculous meningitis. In this case Wecker's operation (slitting the sheath of the optic nerve) was resorted to, with apparent relief to the intense pain in the head from which the patient suffered.

The last of the surgical papers gives an account of *Three Medico-Chirurgical Cases*, and is a joint contribution by JAMES ANDREW, M.D., and GEORGE W. CALLENDER, F.R.S. The first case was one of suppuration in a misplaced kidney. The treatment consisted in tapping the kidney (which at the time of the operation formed a large fluctuating tumour in the right side of the abdomen), and then, the canula being left in place, in opening the peritoneal cavity, stitching together the opposing serous surfaces with silver wire sutures, and finally replacing the canula by a large drainage tube. The patient was greatly relieved by the operation, but, when last heard from, was still compelled to wear the tube. The authors' second case was one of leukæmia treated by transfusion of defibrinated blood, the patient having received decided though only temporary benefit from the operation. The third case was one of lithonephrotomy, or nephrotomy for renal calculus, the stone having been removed without any particular difficulty, though the patient died at the end of the third day. In commenting upon this case Mr. Callender refers to Mr. T. Smith's well-known paper in the fifty-second volume of the *Medico-Chirurgical Transactions* (see Nos. of this Journal for July, 1869, p. 259, and April, 1870, p. 471), and to the papers of Drs. Dawson and Kearney, of Cincinnati. He also revives the famous case of the archer, from Mézerai's *History of France*, evidently being unaware that its claims to authenticity were long since effectually disposed of by Velpeau. The operations of Dr. Gunn and Mr. Durham, in neither of which was any stone found, are not mentioned.

Though this volume is announced as the last of a series, we trust that it is also a harbinger of many more to be issued in the future by the staff of St. Bartholomew's.

J. A., JR.

We shall next invite attention to the medical papers in the volume. In his paper *On Adenoid Disease*, Dr. R. SOUTHEY not only contributes to the literature of this curious and interesting affection the histories of two cases, but also gives abstracts of eighteen others more fully reported elsewhere. The patients who were under Dr. Southey's care resembled each other in having enlargements upon both sides of the neck. These enlargements were peculiar, permitting the hypertrophied condition of each separate gland to be distinctly recognized. The glands are said to have hung together like grapes on a stalk. "They were not," the author says, in speaking of one of the cases, "fused into a boggy mass like scrofulous glands; they did not feel knobby and cartilaginous like scirrhus cancer; they had individually attained larger size, and had a less

hard feel than syphilitic glands possess." In other respects the symptoms were very different. Thus one patient, a woman, was emaciated, was free from fever during the whole of her illness, and had had repeated epileptic seizures. The other, a man, was fairly nourished, had a temperature constantly above 99° , and often above 102° , and, while not the subject of convulsive seizures, presented a peculiar delirium and strange mental condition from the time he came under observation until his death. In neither case was there a marked increase in the number of the white blood cells. In the first case, in addition to the enlargement of the glands referred to above, and of some of the internal glands, the spleen was found after death to be enlarged, tough upon section, and to contain numerous whitish-yellow nodules, which varied in size from a pin's head to a split pea. In the second case the liver as well as the spleen was studded here and there with white semi-translucent nodules. In both cases the kidneys presented the evidences of commencing Bright's disease. A careful microscopical examination of the bronchial glands taken from the body of the woman, showed the increase in size to be due to a hyperplasia of all the normal gland elements; cells with nuclei of various sizes imbedded in cytogenic reticular tissue, the structures being denser from the relative increase of the connective tissue and fibrous stroma and appearing fuller because the whole was more closely packed together.

The analysis of the 20 cases shows that the disease occurred in 16 males and in 4 females, and that the periods of life at which it was most frequently met with were those between 9 and 15 and 45 and 55 years. Its average duration was between 14 and 15 months. It ran its course, however, in one instance in $4\frac{1}{2}$ months, and in another the patient lived 3 years and 2 months. The cervical glands were affected in 12 cases, the mesenteric in 12, the mediastinal in 10, the lumbar in 9, and the inguinal and iliac in 11 cases. In one case only out of the twenty, the spleen was unusually small; in three cases it appeared to be wholly unaffected; it was extensively and peculiarly affected in sixteen cases. Emaciation, cachexia, and very marked anæmia are symptoms recorded in a very large proportion of cases. A high temperature with vomiting, and general disturbance of digestive functions were noticed as incidental occurrences in the course of the disease. Most of the patients died directly of some complication, among the most frequent of which may be mentioned ascites, pleuritic effusion, peritonitis, and diarrhœa.

It is well known that glandular enlargement is not always attended by leucocythæmia, and that there is a condition which can be distinguished from this disease only by the absence of an excess of white corpuscles in the blood. After referring to this fact Dr. Southey expresses the opinion that the leucocythæmia simply indicates a stage in the disease, a view which is adopted by Dr. H. C. Wood, Jr., in an article on the "Relations of Leucocythæmia and Pseudo-leukæmia," in the number of this Journal for October, 1871, and which is still more fully stated by M. Jaccoud¹ in a series of lectures on the *Diathèse Lymphogène*. This eloquent lecturer believes that at first the glands are enlarged in consequence simply of a hyperplasia of the true glandular elements. Later an increased development of connective tissue takes place, which subsequently contracting, renders the efferent vessels impermeable by compressing them. "So that," to use his own words, "if the white corpuscles do not find their way into the blood it is simply because the way is closed against them." Dr. Southey recommends baths, change of habits and climate, as more likely to be beneficial than medicines in the treatment of this disease.

¹ Leçons de Clinique Médicale faites à l'Hôpital Lariboisière.

Mr. NORMAN MOORE reports *A Case of Sclerema* occurring in a boy, æt. 2½, in which recovery took place after the disease had lasted ten months, in consequence, it was thought, of the long-continued administration of cod-liver oil and bark. The case is chiefly interesting from the extreme youth of the patient, there being no other instance on record in which the disease occurred at so early an age. There was no discolouration of the surface.

Dr. DYCE DUCKWORTH continues in this volume his *Clinical Observations upon Certain Skin Diseases*, giving details of cases illustrative of no fewer than fifteen classes. Inasmuch as it is impossible in the space at our command to give abstracts of the reports of all the cases, we select for analysis those which appear to us most interesting. Among the latter is a case of ichthyosis corneæ occurring in a boy, æt. 13 years, when he came under Dr. Duckworth's care. At birth, small red spots were noticed upon his body; in three days there was "heaping up" upon them. A certain degree of symmetry was noticed in the distribution of the affection upon the limbs where it ran in linear masses, raised about a quarter of an inch from the unaffected skin. At intervals on the arms were spurs of a horny nature more than a quarter of an inch in length, and slightly curved. One of these was found on the prepuce and is said to have resembled the claw of a kitten. Numerous patches of xeroderma were situated upon the surface of the trunk. The treatment consisted in the frequent employment of warm baths. A lotion composed of one part of liquor potassæ to five parts of water was applied on lint under gutta-percha muslin. Glycerine of starch was also used. Internally iodide of potassium, and quinia, together with good diet, were ordered for him. Under this treatment some improvement is said to have taken place.

In a case of xeroderma with brown ichthyosis, affecting the skin generally, benefit was thought to have resulted from inunction with olive oil. Later the surface was washed with soft soap, nitro-muriatic acid and sulphate of magnesia being administered internally. In this case Dr. Duckworth did not prescribe arsenic, and we observe that there are several cutaneous diseases in the treatment of which he does not employ it. Thus, for instance, he says he has seen no benefit arise from its use in pemphigus diutinus, nor does it appear in the list of medicines with which he treated the following affections: lichen planus, morphœa, eczema papilliforme, molluscum fibrosum, and acne rosacea. On the other hand, he reports a case in which an herpetic eruption occurred in the sacro-coccygeal region in a girl who was taking arsenic at the time. Although this is the first time the author has met with this effect of the drug, he refers to a paper by Mr. Hutchinson, who has shown it to be a not uncommon occurrence. This we can to some extent confirm by our own experience, for some years ago we had under our care two patients in whom herpes zoster supervened during the administration of arsenic for another affection.

While speaking of porrigo decalvans, Dr. Duckworth refers to the local application in this complaint of liquor ammoniæ, which is recommended by Dr. Nevins, of Liverpool, who employed it with success in two cases. "The whole scalp," Dr. Nevins writes, "was rubbed with a small flannel mop soaked with strong solution of ammonia—so strong that neither the eyes nor the nose of the operator could bear it. The scalp appeared insensible to it—no pain, no inflammatory redness occurred. This was repeated daily until the scalp became sensitive, and the strength was reduced. By degrees, in a few weeks down appeared (the scalp could not bear any approach now to the strong solution), and in about six months the head was fairly covered by a sufficiently vigorous hair to allow the boys to dispense with wigs, which they had previously worn." From this, and from the results of his own experience with the remedy, Dr.

Duckworth is inclined to think that it will be found to give more satisfactory results than oil of turpentine. In a few cases the ammonia treatment cannot be borne on account of its causing vesication.

The author believes that the discrepancies which are found in the accounts of different observers in regard to the origin of the growths in molluscum fibrosum are owing principally to the examinations being made at different periods of development. He agrees with Dr. Fagge and Dr. Beale in localizing the earliest nutritional changes in the two external layers of the hair follicle; the relations between the new growth and the original follicular and glandular structures being, however, lost at a later period in consequence of the mechanical disturbance entailed by the former. The paper closes with some remarks on the topical action of chloroform upon patches of tinea, which is regarded as specific. When a few drops are poured upon the affected region and allowed to evaporate, a peculiar appearance is observed in certain of the hairs, and at their point of emergence from the scalp they become white, or of a primrose shade of yellow, and remain so. In this way the diseased hairs may be at once distinguished from the healthy. A white powdery appearance results from the action of chloroform upon the diseased patches in tinea favus of the epidermis and in tinea versicolor.

Under the name of "*Imbecility with Ataxia*," Dr. T. CLAY SHAW describes a condition resembling to some extent that to which Dr. Hammond first applied the term athetosis, and in which there is an inability to retain a fixed position owing to slow but constant action of certain extensor and flexor muscles. Dr. Hammond's cases differ from those of Dr. Shaw in some essential points. Thus they occurred in persons who, up to a certain age, had been in good health, with perfect command over all their muscles, and in none of them is there any mention made of movements in the muscles of the head, neck, or face, which in those reported by Dr. Shaw were well marked, resembling in character those of the forearm and fingers. The patients of the latter were also imbeciles, the defect in their intelligence being either congenital or having been acquired soon after birth. The term "imbecility," the author says, is difficult to define exactly, and his patients differed certainly from idiots met with in asylums. Thus, in shape and size of head and ears, arrangement and development of teeth, height of palate, power of articulation, memory, some were of first-rate order, whilst others exhibited deficiencies or defects condemning them to a lower stage of the human creation.

The movements to which Dr. Shaw calls special attention consist of a slow protrusion of the head forwards and upwards, to one side or the other, and of its retraction downwards and to one side. The facial movements are very extraordinary, and give rise to varying expressions, the most frequent being a broad grin, owing to spasms of the retractors of the angles of the mouth and the "laughing muscles," the zygomatics, and the lower fibres of the orbiculares palpebrarum, which raise the lower eyelid slightly; the forehead, too, is wrinkled. To this succeeds—or may succeed—a comparatively blank look, from relaxation of these muscles; but the marks of the wave are shown in the furrows left, giving an appearance of age greater than is actually the case. In this disease one part of a muscle may be quite at rest, the other being in motion; in chorea, on the other hand, the whole of any muscle that is affected acts at once and suddenly; the movements are regular, not disorderly, as in hysteria, or tremulous, as in paralysis agitans and the various forms of sclerosis. Dr. Shaw is inclined to think that the lesion causing this condition involves the nucleus of the seventh pair of nerves, the cervical portion of the cord, or the corpora striata. Seven

cases are reported in this paper, which contains a lithographic plate showing the varying expressions of some of the patients.

Dr. J. WICKHAM LEGG contributes an experimental paper *On the Changes in the Liver which follow Ligature of the Bile Ducts*, in which he shows that one of the most important of these is an increase of the connective tissue of that organ. This increase could be made out within a few hours after the ducts had been tied, but it was very decided in those animals which lived over the fourth day. The hepatic cells could be brushed out of the tissue, leaving alveoli of various sizes. In addition to this, great numbers of bodies, which Dr. Legg calls lymphoid corpuscles and which closely resembled leucocytes, were seen under the microscope. In regard to the cause of the hypertrophy of the connective tissue the author thinks this is to be found in the action of the ligature upon the fibrous coat of the bile ducts. An over-growth of this is set up, which extends into the porta of the liver, and thence spreads over Glisson's capsule, and the whole of the connective tissue of the liver. The chief alterations noticed in the liver cells were atrophy and fatty infiltration; the former being most marked in those animals that lived the longest, the latter in those that died soon after the operation. In some cases the atrophy had advanced to such a degree that the liver cells were not larger than leucocytes. In no case, however, were they found dissolved, which goes to prove the incorrectness of Von Deusch's theory that obstruction of the bile ducts is a cause of acute yellow atrophy; the liver cells being dissolved by the retained bile, Dr. Legg denies that bile has any such power, having never been able to produce a dissolution of the hepatic cells by the addition of bile to them. On the other hand, Winwarter has come to the conclusion that it is the connective tissue which is first attacked in acute yellow atrophy, and Dr. Legg admits that his drawings and description of the changes in the early stage of this disease, very closely correspond to those which were found in those animals that died at about the close of a week after ligature of the bile ducts, but the two conditions are distinguishable by the course which they afterwards take; in acute atrophy the liver cells dissolve into a mass of fatty detritus carrying the connective tissue with them; in the case of ligature, the changes occur which have already been described. In cases of congenital obstruction of the bile ducts outside the liver, interstitial hepatitis has generally been found after death.

The animals used were cats, because these bore the operation better than dogs. Three out of the whole number (16) died from prolapse of the bowels. One had the diabetic puncture done on the sixth day after the operation and died on the ninth day. So in twelve only was the natural progress of events uninterfered with. Out of these twelve two died on the third day; two on the fourth; and one on the eight, tenth, fourteenth, sixteenth, and eighteenth, and twentieth days respectively. The two others were killed on the twenty-seventh and twenty-ninth days; in them, however, the bile had found again a passage to the intestines. In one case the ligatures had eaten through the duct and were still in their place, but the bile had formed a passage outside the knot into the intestines. In the other, the common duct gave off a branch above the ligature which communicated with the duodenum. In no instance did jaundice of the conjunctiva declare itself before the tenth day after the operation, and in one not until the fourteenth; a result which differs from that obtained by Frerichs, Tiedemann, Gmelin, Leyden, and Golowin. The cause of death was obscure, but Dr. Legg is sure it was not peritonitis. He is inclined to attribute it to the changes which take place in the liver. This organ, when tested by iodine, was found to contain little or no glycogen; and when the watery extract of the liver was examined in three cases for sugar, none could be found. Further, on

the sixth day after the ligature of the bile duct, no sugar appeared in the urine after the diabetic puncture was done. Of all the functions of the liver known to us, he says, the most important is the preparation of glycogen, and this seems to pass into complete abeyance soon after the ligature of the bile ducts. Glycogen, he continues, is one of the most necessary elements of nutrition; and it is not surprising that animals should waste rapidly when the system is deprived of it.

Mr. W. MORRANT BAKER contributes a paper *On Erythema Serpens*, a disease which bears, as he himself points out, considerable resemblance to a form of erysipelas which he designates *E. ambulans*, but which is more properly called *E. erraticum*, since the redness spreads by extension from the point first attacked. The cause of the disease is without doubt the introduction through a scratch of some poison, generally decomposing animal matter, beneath the epidermis. The affection is not uncommon among butchers and women employed in preparing meat for the table. A few days, a week, or perhaps a fortnight after the reception of an injury, which in many instances is so slight that it has attracted no attention, an inflammatory flush will be found surrounding it, the redness will extend from this point in a circular manner, but as it does so, it will disappear from the part first attacked, and so it goes on spreading by a larger and larger circle. If, for example, the erythematous blotches are at first about the ball of the thumb, they will be found in a few days to have extended towards the fingers, as well as towards the wrist, and not in one direction more than another. It may therefore travel quite as readily in a direction opposed to that of the lymph and blood, as in one corresponding to it. It affects especially the region of the finger ends and knuckles, and the patient bends the fingers "gingerly," but more as if they were swollen than with the tenderness of movement belonging to an inflamed joint. There is, however, but little swelling altogether. The pain is described as very considerable, as tingling or burning and shooting, and for the most part in the hand or fingers only; but some patients describe it as also shooting up the arm. There is, however, rarely any line of redness or tenderness of the forearm; more rarely still of the upper arm, extending towards the axilla; and pain or swelling in the latter region is quite exceptional. The freedom from marked affection of the lymphatics is a distinctive feature of the disease. The constitutional disturbance is not great, but it is frequently large in proportion to the apparent local inflammation. The patient usually looks anxious or irritated, and frightened; partly from some real dread of having a bad hand, but as much from constitutional irritation. The prognosis in this form of erythema is always favourable; no case having in Dr. Shaw's experience ever ended in suppuration or in other way than by resolution and a gradual disappearance of the inflammation. The average duration of the disease is about three weeks. The treatment required is simple—fomentation with hot water, poultices, and a simple saline aperient have been almost always found sufficient. Notwithstanding the diversity which exists between the effects of this disease and those of poisoned wounds, Dr. Shaw is inclined to look upon the two conditions as essentially the same, the severity of the symptoms in the latter case being caused by the greater intensity of the original injury. In erythema serpens it is quite conceivable that the disease may begin at no lower level than the deeper layers of the cuticle. Both nerves and bloodvessels have their functions exalted, as shown by the pain and redness, but there is good reason for believing that the disease is essentially confined to the surface. On the other hand, poisoned wounds are generally caused by deeper punctures, and are accompanied by suppuration, and by inflammation of the lymphatics.

There is some analogy, Dr. Shaw thinks, between this disease and urticaria, which he conceives is caused by the circulation in the blood of some poisonous matter; the eruption being caused by some irritant, as for instance, the scratch of the finger nail, which determines the poison to a particular locality. The author, at the close of his paper, which is illustrated by a handsome coloured lithograph, refers to a variety of erythema closely resembling that described by himself which is said by Dr. Tilbury Fox to occur in persons whose hands come in contact with dyes.

In concluding our notice it gives us pleasure to say that the majority of the papers are of more than ordinary interest. J. H. H.

ART. XIX.—*Transactions of American State Medical Societies.*

1. *Transactions of the Kentucky State Medical Society*, 1874. Nineteenth Annual Session. 8vo. pp. 263.
2. *Transactions of the Minnesota State Medical Society*, 1874. 8vo. pp. 86.
3. *Transactions of the Medical Society of the District of Columbia*. Nos. I., and II., April and July, 1874. 8vo. pp. 24 each.
4. *Transactions of the South Carolina Medical Association*. Annual Session, held April 14th and 15th, 1874. 8vo. pp. 124.
5. *Transactions of the Medical Society of California during the years 1873 and 1874*. 8vo. pp. 152.
6. *Transactions of the Eighth Annual Meeting of the Medical Association of the State of Missouri*, April, 1874. 8vo. pp. 63.

THE address of the President of the *Kentucky State Medical Society*, Dr. J. W. THOMPSON, contains generally sensible remarks on a variety of matters connected with the interests of the profession in Kentucky.

Dr. ELY M'CLELLAN contributes a *résumé* of our knowledge concerning *fibroid tumours of the uterus*. The author modestly characterizes his work as an attempt to condense the results of experience and observation from all sources upon this important subject. In this he would seem to have fairly succeeded.

In a *report on surgery*, by R. F. LOGAN, M.D., we find in some remarks on the comparative safety of chloroform and ether, a sort of apology for, or explanation of the greater fatality of the former agent, on the ground that, "it is used more indiscriminately and doubtless often more carelessly than ether." We believe this assumption to be both incorrect and mischievous. The terrible and indisputable fact is, that no human care, wisdom, or foresight can prevent occasional deaths from chloroform. On the other hand, only the grossest mismanagement can render ether inhalation fatal.

The usefulness of carbolyzed dressings for wounds is believed to have been overrated. Where immovable dressings are desired for fractures, manilla paper is preferred. The writer points out as an infallible sign of fractured clavicle, unnatural prominence of the posterior border and inferior angle of the scapula. A fractured patella in a lady of seventy, united perfectly under use of the ring appliance, introduced by Dr. Gibson of St. Louis.

Reference is made to recent advances in surgical methods and procedures. Pneumatic aspiration, and the Esmarch bandage, are regarded as of the highest importance.

Dr. LEWIS ROGERS presents a brief paper on *climate in pulmonary consumption and California as a health-resort*. The views expressed are discriminating and sensible rather than sanguine.

An article on *cerebro-spinal meningitis* is chiefly interesting as containing a wood-cut, from a drawing of a parasite found in the alvine discharges of a deceased patient. What the proper name of the creature is we do not pretend to say—surely not the *tricocephalus dispar*, as styled by the writer. The drawing measures 3.5 inches by .75 inch, and is said to be taken from a microscopic image magnified ten diameters. The middle three-fifths is an oval, like the trichina capsule, but the end-fifths are, respectively, a rounded and blunt, and a slender point. We are unable to find anything resembling it in Cobbold's work. The writer names it as above indicated, and says it is seldom seen in the United States.

Under the title of *The Medical Borderland*, Dr. ANDREW MCFARLAND presents some interesting observations and suggestions upon those diseased conditions in which doubt exists as to the respective share taken by the brain, or by other organs, in the train of morbid activity.

Dr. D. W. YANDELL gives some of the facts concerning six operations for the removal of *ovarian cystic tumours*. Four patients recovered.

From a report on registration we learn that after being for over ten years without any registration system whatever, the State has lately adopted one which is very inadequate. Dr. FOSS makes a most strenuous effort to awaken his brethren from the torpor and indifference into which they have fallen concerning this matter, and to open their eyes to its pre-eminent importance. He deserves much credit for his manly appeal.

In an essay on *diseases of the conjunctivæ*, Dr. D. S. REYNOLDS makes a vigorous protest against the use of caustic applications in ophthalmia. Mild washes of any of the substances capable of coagulating albumen, he believes to be perfectly successful as well as safe, when used frequently in connection with anodynes, and with frequent removal of discharges.

Summer complaints in children, is the subject of an admirable article by Dr. J. A. LARRABEE.

Dr. FRANK WILSON directs attention to classes of cases in which *inhalation of oxygen* has been found beneficial. Among these are named obstructions of the air-passages and diminished lung capacity; also blood-poisoning by chloroform, opium, urea, etc. It is stated, too, that under such treatment indolent ulcers improve; imperfect development of eruptive diseases is made perfect; and that the assimilation of ferruginous tonics is promoted.

An article on *glaucoma* does not aim at the presentation of either new facts or new theories.

Dr. EDWARD RICHARDSON, in a paper headed *The Physician*, sets forth in a somewhat popular style some of the external conditions which interfere with the professional success of the educated and honourable physician.

Dr. J. J. SPEED asks the question, *has medicine as a science advanced?* As a rule we deprecate the publication of addresses on such general subjects. We glanced at this one with the expectation of finding a long-drawn string of platitudes and commonplaces, such as experience has but too much accustomed us to meet. Instead of this we find a bright and intelligent discussion, full of good sense and in the very best spirit. In a few clear, vigorous touches, the writer depicts the past of medicine, and traces its influence on the present. The proper field of medical treatment and the limits of the physician's interference are admirably set forth. The paper closes with an eloquent description of the intellectual and moral qualifications of the educated and zealous practitioner who rightly knows the dignity of his calling. The literary style, though not free from occasional extravagance and bad taste, is yet generally terse and

vigorous—worthy of the just and clear views and the elevated sentiments expressed.

Two papers, on *albuminuria* and *calculus in the female bladder*, do not seem to call for special notice.

The closing fifty pages of the volume are filled with a portion of an elaborate history of the *Medical Literature of Kentucky*, by Dr. L. P. YANDELL.

We are glad to be able to say that this volume is exempt from any articles which by matter or style will excite ridicule and contempt. Either the educational average of Kentucky medical men is higher, or the publishing committee more discriminating and courageous than in many other States whose medical society transactions we have been called to notice. Nevertheless, we are disposed to question the expediency of publishing essays on medical subjects, which, like some here, though open to no special criticism, are yet mere reproductions of the teachings to be found in books and journals.

The pamphlet is handsomely printed on tinted paper, but is not quite so free as it should be from typographical errors.

2. The first quarter of the *Transactions of the Minnesota State Medical Society* is occupied with the records of the last semi-annual and annual meetings. The address of the retiring President, Dr. SWENEY, deals with the obstacles encountered in the practice of medicine. The attention of the profession having been of late often called to the need of a higher standard of medical education, the speaker deemed it not inopportune to glance at another phase of the matter, and show how great and how lamentable is the ignorance of laymen. The utter recklessness and irrationality with which the public not only judge and criticize, but interfere with, the work of the physician, are forcibly illustrated. A little more attention to the rules of composition would have added to the value of this paper.

The annual essay, by Dr. H. C. HAND, treats of the *abdominal branches of the pneumogastric nerves, and their relations to the treatment of choleraic discharges*. If, perhaps, this paper contributes little of positive novelty to our physiological or even therapeutical knowledge, it has the merit of directing attention to an important subject which has not become hackneyed. Some half-dozen experiments, also, on the lower animals, are here reported. From the quoted cases of other observers, and from his own experiments, the writer believes that pressure, or cold, applied over the vagi in the neck, may prove to exercise a controlling influence over Asiatic cholera, and over other abdominal troubles. Moreover, he makes the point that in desperate cases division of the nerve on one side would be good treatment—the left when emesis is the graver symptom, and the right when catharsis threatens life.

A committee on *medical education* take high ground as to the need of a better culture. The multiplication of medical colleges is deprecated. Longer and wider courses of instruction, with examinations from time to time, and rigid enforcement of rules forbidding the reception as medical students of men destitute of general culture, are urgently recommended.

A report on surgery contains a case of *excision of hip-joint*, in which perfect recovery occurred, although the femur was removed down to an inch and one-fourth below the trochanter major, and a hole was broken through the acetabulum into the pelvic cavity.

The removal is reported of a testicle weighing thirteen ounces. Operations for strangulated hernia, parotid tumour, vesical calculus (weighing 609 grains), and for several cancerous growths, are briefly recorded. One terrible wound, whereby the muscles were torn off the bone, and the head of the humerus

plucked out of its socket, was treated by exsection followed by carbolic acid lotion. No sutures were used. The wound was injected and the parts kept wet with the solution—forty drops in three ounces of water and one of alcohol—and no other application made. Recovery of motion was nearly complete, and scarcely one spoonful of pus formed.

3. The *Medical Society of the District of Columbia*.—Whether warned by the example of other societies, or learning wisdom from some previous attempts at selecting matter for publication, we do not know; but we find in the first of these two modest pamphlets some principles of selection recommended by the publishing committee, which seem to us very judicious. We have so often adverted to the highly objectionable matter frequently included in the publications of medical societies, that we cannot refrain from directing attention to the rules here laid down, as admirably adapted to secure the exclusion of mere balderdash. The committee recommend that the material printed be confined to the following descriptions:—

“(a.) Original theories, or synopses of papers containing such theories. (b.) Original modes of practice. (c.) Cases testing modes of practice still *sub judice*. (d.) Cases deserving of record from their being curious or rare. (e.) New facts, experiments, or discoveries appertaining to medicine and its allied sciences. (f.) Such parts of debates as it may be deemed by this committee would, if published, be of general interest to the profession at large, or tend to promote the advancement of medical science.” Had these rules been in force elsewhere we should have been spared the necessity of saying some very unpleasant truths.

A case is reported of ulceration of the *appendix vermiformis*, resulting in perforation, sacculated abscess, external opening, and the discharge of two silver-coated quinia pills taken some days previous. *Congenital malformation of the diaphragm*, resulting in sudden death at the age of fifteen years, while lying in bed, is reported by Dr. THOS. MILLER. The stomach, spleen, and a portion of intestine had passed up through an opening two or three inches in diameter, and had hampered the heart's action.

Attention is directed to the agency of powerful cathartic vermifuges in producing intussusception.

In a case of congenital *atresia of the œsophagus* life was prolonged till the eleventh day. The child nursed well, but the milk was regurgitated “after a short time.” The œsophagus formed a *cul de sac*, with no communication with the stomach. “There was a communication, however, between the stomach and bronchial tubes.”

Three instances of congenital stricture of the intestine occurring in one patient are reported.

Poisoning through an abraded finger, in the delivery of a dead child, led to quite severe though transitory symptoms.

Two cases of successful *ligation of the right common carotid artery* are reported.

Extra-uterine pregnancy, in a woman of twenty-five, terminated in death by internal hemorrhage at the third month. The uterus was enlarged, and contained a well-formed decidua. Together with about a gallon of clotted blood was found, in the abdominal cavity, a foetus of ten weeks which had escaped by rupture from the right Fallopian tube. There were small cystic tumours in the right ovary and upon the exterior of the uterus.

Death from *rupture of uterus*, with contracted pelvis, is reported.

Twin pregnancy with twin placenta, and several unimportant cases, are briefly presented.

In a discussion upon the use of ether or chloroform, the weight of opinion was decidedly adverse to the latter. One physician, however, has so little fear of it that he allows his own children, afflicted with pertussis, to inhale it from the bottle.

A successful case of *tracheotomy* for membranous croup was narrated, and two specimens of false membrane exhibited. One of these was a perfect mould of the parts from the larynx to the bronchi; and the exudation was once reproduced. Attention was directed to the efficacy of *copaiba* in croup, used generally and locally.

A case of *hæmaturia* and several cases of *erysipelas* were discussed.

The second number of this series opens with another case of *multiple intussusception*, in a case where anthelmintics had been given.

An interesting case of cancerous tumour separating and compressing the œsophagus and trachea is reported. Some symptoms indicated pressure upon nerves.

An interesting debate on climate as affecting phthisis, brings out individual testimony of experience in different regions.

Fatal cases of *Bright's disease* and of *perineal section* for stricture gave rise to discussions on the nature of the former, and on the cause of death in the latter.

An address upon *syphilis*, by Dr. J. F. THOMPSON, gave rise to discussion as to the duality of the malady, and as to treatment.

A debate upon *ovariotomy*, and a synopsis of an address on *hyponutrition of bone*, with the discussion ensuing, are interesting and instructive. The address calls attention to the frequency with which, both before and after birth, certain bones are inadequately developed. This lack of growth, too, is not unfrequently mistaken for active disease or its results.

Dr. JOHNSON ELLOR has tried, and highly recommends, hypodermic injections of whisky, where immediate and powerful stimulation is demanded without delay.

4. The *Transactions of the South Carolina Medical Association* seem to us to be unusually good. The articles and observations are almost without exception interesting and instructive.

In the report of the meeting, we find an account of an amputation of the foot, in which the malleoli and a portion of the os calcis were left to add firmness and bulk to the stump. Dr. TURNIPSEED, who performed the operation, believed a better stump and a somewhat longer limb resulted from the retention of the os calcis. Dr. KINLOCH was disposed to doubt whether this method would give as good results, generally, as that of Syme.

The annual address of the President, Dr. S. BARUCH, is entitled "*Methods of Fostering the Interests of Medicine and its Votaries.*" One of the points made is the wisdom and expediency of keeping the mind open to lessons from all sources.

Medical societies, the recording and discussing of cases, and the reading of medical journals, are recommended as essential to professional improvement. We question whether the multiplication of medical schools is desirable—as the speaker might be understood to signify. On the contrary, we believe, better results would flow from a few great schools, with a high standard, located in our larger cities, than from the increase or maintenance of smaller ones scattered all over the country.

A committee appointed the year before, to inquire into existing knowledge as to the *growth and reproduction of bone*, presents a well-written summary of the views of the chief authorities.

Another committee deals with the *effects produced upon the foetus by the administration of chloroform* to parturient women. The statements of many writers are brought together, and their value discriminatingly weighed. The committee believes that there is no evidence that any moderate use of the drug injures the child. Experiment upon the lower animals is suggested as a means of ascertaining the degree or protraction of narcotism necessary to affect the offspring. The report excited considerable discussion.

Dr. BUIST presented an account of the removal of a *tumour of the upper jaw*, from a negro boy of nine years. It was of only ten months' growth when operated upon, and nearly filled up the mouth, besides causing great external swelling. The whole left upper maxillary bone was removed. The formation presented the characteristics of *epulis*. Recovery was rapid and complete. Three years later the patient was perfectly well and exhibited very slight traces of the operation.

Prof. F. L. PARKER puts upon record four cases. The first is that of a woman ill with *Bright's disease*, in whom the ophthalmoscope revealed that degenerative form of retinitis peculiar to such cases. The case is made the text for some general remarks on the etiology of the kidney disease, and an account of the different forms of visceral impairment which may attend it.

The second case is one of most extraordinary *comminution of the frontal and other bones* of the head and face. The patient was comatose when found, rallied partially, but died five days later. Only one small, penetrating wound was found in the scalp, the violence having been done with some flat or rounded body. The autopsy revealed the following fractures—frontal bone in twelve pieces; left temporal and parietal, three; right temporal; parietal; sphenoid; ethmoid; both supra-orbital arches; orbital plates of frontal, sphenoidal, ethmoidal, and superior maxillary bones; and both malar bones. The latter were disarticulated from the maxillary on both sides. One fracture was through the sella turcica, with wide separation. The membranes, and two great sinuses, were torn. The ventricles and brain substance were full of extravasation, and much broken down. That any attempt at reaction should follow such terrible injury is surely wonderful.

Urethral stricture, leading to hypertrophy, and amputation of the penis, is the subject of the third case. The organ weighed a pound, and was generally enlarged. Stricture was almost continuous, and fistulæ very numerous. Great improvement to general health followed the operation.

The fourth case was one of fatal *intussusception* in a young infant. Part of the ileum, the cæcum, ascending colon, and three-fourths of the transverse colon were passed down into the lower bowel, even protruding from the anus. This case having led the writer to investigate the literature of the subject, he makes a condensed statement of medical knowledge and opinion on intestinal obstructions, and especially upon their treatment by abdominal section. The doctor very handsomely acknowledges that, after giving much labour to the investigation, he came across the monographs of Drs. Stephen Rogers and Samuel Whitall, and finding their means of collecting facts were ampler than his own, availed himself freely of their results.

Dr. E. B. TURNIPSEED gives an account of the *removal of a knife-blade* from the head of a negro man, after remaining for three years imbedded in the anterior left lobe of the brain. He had been stabbed in a quarrel, but had no certain proof that the blade was left in the wound. Epileptic convulsions soon

appeared, and continued with great though variable frequency. His condition was so very bad that Dr. T. resolved to expose the slight bony swelling which marked the wound, and, if nothing was found, then to trephine. The blade was discovered very readily and removed. No further interference was judged to be advisable. The piece of steel was one and a quarter inches long, one inch having been in contact with the brain. Convulsions have since occurred, but with diminished frequency.

Dr. BUIST, having met with two cases of the parasite known as the *guinea worm* or *dracunculus*, gives a very interesting account of the conduct and the effects of this most formidable and curious creature.

Dr. GIBBES describes a case of *hernia* in a man of fifty-seven years, of the same character as congenital hernia, or "into the funicular portion of the vaginal process of the peritoneum." The swelling had first appeared, suddenly, after great exertion, thirty-three years before. In the first operation the sac was not opened; but as there appeared a strong tendency to renewed trouble Dr. Gibbes decided to remove the whole large and thick sac, with the cord and testicle. The neck of the sac was then fixed by stitches, in the canal, and the result has been a radical cure.

Twin pregnancy, with abortion of one ovum at the second month, and full development of the other, is reported by Dr. W. T. C. BATES.

Traumatic epilepsy, appearing ten years after fracture of the skull, and treated three years later by removal of diseased bone, is the subject of an extremely interesting paper by Dr. JOHN T. DARBY. Convulsions had become so alarming, frequent, and severe that the patient wished to take even the smallest chances of relief. Pressure on a certain portion of bone always causing distress, that portion was removed with a Hey's saw. The patient recovered well, and has been vastly better, though not wholly free from epilepsy; two convulsions occurring in eleven months.

The patient was shown to the Society, and much discussion ensued as to the probability of his improvement continuing.

Dr. GIBBES reported an operation for *hare-lip* in the case of an adult negro. He believes this and other arrests of development to be very rare in the African race.

A case of *albuminuria*, apparently due to Bright's disease, was treated with nitric acid, by Dr. TURNIPSEED. The albumen ceased to appear after six weeks, but the treatment was continued for several months. Some eighteen months have now passed without any recurrence of symptoms.

5. This handsome and neatly-printed number of the *Transactions of the Medical Society of California* opens with a report from the publishing committee. Careful preparation for the press, and constant attention to condensation, are the sensible points suggested to writers; we nevertheless find the committee closing with the curious request to "critics, and especially *hypercritics*" to "spare their shafts, if any target presents itself throughout the volume, which might be open to the armature of these *toxophilites*." What is that criticism worth which fails to point out the wrong, the false, or the foolish in a work, as well as the good, true, and wise? To praise everything may be a pleasant and comfortable course, but not one leading to edification.

After the usual record of the meetings of the Society we have the annual address by the President, Dr. PINKERTON. That his subject was the necessity of a higher professional education is one of many signs of the times, indicating how widespread is the perception of an improvement needed, and how general the desire to aid in its attainment. The views of the orator are sensible and well expressed.

In the form of a *report on ophthalmology and otology*, Dr. Wm. F. SMITH exhibits an analytical table of his practice as a specialist during the year. Some suggestions are offered as likely to prove useful to the general practitioner; and some remarks upon methods of operating for cataract. A new incision has very recently been tried by him, with apparent success. It is corneal, transfixing the transverse diameter, and so completed as to bring the centre a millimetre above the centre of the undilated pupil. Dr. Smith has learned, from a gentleman who accompanied Captain Hall's polar expedition, that among the natives of some region visited there is performed a rude operation for the relief of cataract. It is done by old women, under the guise of charms or mysterious influences; but it was found that a needle-formed fish-bone was thrust into the centre of the eye; and that cure often resulted.

Dr. F. W. TODD, in a *report on obstetrics*, glances at the advances of this branch of medicine; and gives brief accounts of two or three cases recently observed by him.

Dr. C. CUSHING gives his views on the *management of abortion*. When hemorrhage becomes considerable, if the os is not enough dilated to permit the removal of the ovum, he inserts sponge-tents. These control bleeding much better than vaginal tampons, and at the same time prepare the way for removal of the cause. Inserting a tent, or replacing one by a larger, the physician can, he thinks, leave his patient for hours with perfect safety. Monsel's solution applied by a sponge to the uterine surface is used when bleeding continues after dilatation and removal of ovum. Opiates are usually employed as recommended by other writers. Dr. Cushing has never witnessed ill results from the persulphate; nor has it produced severe pain.

A *report on public hygiene and State medicine* is presented by THOMAS M. LOGAN, M.D., Secretary of the State Board of Health. The paper is an earnest and thoughtful exposition of the immense value of health boards, of the functions which they should perform, and of the discouragements and impediments encountered by the California Board. So little appreciation of sanitary science had the legislature that a serious attempt was made to abolish the Board. We infer from Dr. Logan's remarks that the defeat of this attack was due more to popular intelligence and good sense than to legislative wisdom or professional interest. For he goes on to deplore the want of support and co-operation on the part of physicians. The registration system has practically failed for lack of proper professional action. Not only have physicians neglected their duty, but in many cases have actively opposed and refused to comply with the law. This sad state of things is attributed to the tolerated existence of so large a body of ill-educated and unfit men in the medical profession. No adequate measures are taken, or even attempted, to separate the chaff from the wheat. No high standard is set up, and no lines drawn to properly distinguish the educated and honourable physician from the unprincipled and often ignorant adventurer. If the showing here given is a fair one, the profession of California cannot too soon make a vigorous effort to purge their ranks and draw tight the reins of discipline. The best and ablest must enter into the fight, instead of standing aloof, as, according to Dr. Logan, some of them do.

A good paper on *infant hygiene*, prepared by Dr. VAN WYCK, has for its principal point an attempt to show that cream—from cow's milk—diluted and sweetened with sugar-of-milk, forms the best imitation of "mother's milk." This mixture avoids that excess of caseine, compared to butter, which exists in cow's milk, and is the cause of its indigestibility.

Dr. ANDREI presents a somewhat full abstract of the pathological changes leading to *ankylosis of the knee-joint*, and the treatment adapted to prevent

and to relieve it. The old practice of allowing the inflamed joint to repose in a semi-flexed, lateral posture, is condemned. The dorsal position, with extension, and slight changes, day by day, from angular to straight and back again, are believed to be good treatment to prevent ankylosis. Various methods of breaking up adhesions are carefully compared.

Dr. LEVI C. LANE removed a *left parotid tumour*, which was the seat of severe neuralgic pain. Converging strabismus, and deafness, had also begun upon the same side. Two months later, the wound being wholly healed, and strabismus and deafness unchanged, the terrible hemicrania which had nearly ceased returned with increased violence. Treatment failing, it was accidentally found that pressure on the left carotid stopped the pain. The artery was therefore ligatured below the omo-hyoid muscle. All went well, and the neuralgia was cured. The time since is unfortunately not stated.

The doctor also reports a new operation for *ectropion*.

Dr. BARKAN gives some interesting results of his experience with *foreign bodies in the eye*.

Dr. DUTTON describes some very ingenious *appliances*, original and otherwise, for treating fractures, in places remote from elaborate apparatus. Attention is drawn to the fact that accurate comparative measurements of sound and broken limbs can be had only when the two are subjected to equal stretching force, to relax muscles and lengthen ligaments. Extension by weights, for some hours, will appreciably lengthen the sound leg. The writer's devices for hoisting the loaded fracture bed, for affixing pulleys, for insuring accurate measurement, etc., are shown by wood-cuts.

The method of counter-extension, used in St. Mary's Hospital, San Francisco, in fractures of the femur, is explained by Dr. MILLINGTON. The long, straight splint, with adhesive plasters from knee down to lower end, and from the thigh muscles up to upper end of splint, are the means used.

In a paper by Dr. GIBBONS, entitled *Contributions to the Medical Botany of California*, we notice some eight cases seeming to show the very great power over asthma exercised by the leaves of the *Grindelia*. It would seem even to effect a radical cure in uncomplicated cases. In pertussis its influence was less marked, but very good.

We would like to give some idea of the tenor of each paper in this pamphlet; but space will allow us only to name the titles of the few that remain.

Polypi of the uterus, by Dr. AYER. Case of *amputation of both legs*, using a modification of Esmarch's bandage, by J. C. VAN WYCK, M.D. *Treatment of urethral stricture by internal section*, by Dr. C. BRIGHAM. *Foreign bodies in the alimentary canal*, by AUG. TRAFTON, M.D. Report on *medical microscopy*, by Dr. J. H. WYTHE.

The present number of these Transactions is wholly free from the objectionable matter which occasionally finds admission into similar works, through the too easy good-nature of the societies or their publishing committees. The papers are useful and interesting, and their composition shows little of that slovenliness which is sometimes so painfully apparent. We heartily congratulate the Society on the excellent work prepared by their committee.

6. The publishing committee of the *Transactions of the Medical Association of the State of Missouri* announce that two papers are omitted from this collection on account of their authors' having already sent them to medical journals, and three at the request of the writers. We cannot but regret that the kind of modesty here shown is not oftener met with.

Here, as elsewhere, we find proofs of the widespread dissatisfaction among

physicians with their status before the community. A committee makes a report upon medical education, in which facts are recognized, and means of improvement suggested. A desire is also expressed for fuller teaching of medical jurisprudence in the medical schools.

An act having passed the legislature requiring, after September 1, 1874, the registration of physicians and surgeons, a resolution was offered looking to the exclusion of quacks, through the co-operation of the county and State societies with the authorities, by preparing lists of irregulars, and by scrutinizing diplomas; but the proposal failed.

The papers presented include reports on the progress, respectively, of medicine and of surgery, in which are noted some of the chief discoveries and improvements recently made.

Dr. RUMBOLD gives drawings of various forms of atomizers, by aid of which he treats diseases of the nasal and pharyngeal cavities. He claims that the ordinary nasal douche does not reach all parts; and that no single spray-producer can do so. Using different forms for different localities, the end is completely attained.

A paper on *electricity in medicine*, and an abstract of one called *Ophthalmic Portents*, make up the remainder of this modest little book. The papers are unpretending, but written with care. The one upon surgical progress is quite full and interesting.

B. L. R.

ART. XX.—*The Toner Lectures. Lecture III. On Strain and Over-Action of the Heart.* By J. M. DA COSTA, M.D., Professor of the Practice of Medicine in Jefferson Medical College, etc. Delivered May 14, 1874. 8vo. pp. 28. Washington: Smithsonian Institution, 1874.

THIS is the title of a lecture, being the third of the "Toner lectures," delivered in Washington, May 14, 1874, and published in the *Smithsonian Miscellaneous Collections*, August, 1874.

Professor Da Costa has already, in the *American Journal of Medical Sciences* for January, 1871, and in the *Medical Memoirs of the U. S. Sanitary Commission*, issued in 1867, called attention to a morbid condition which he appropriately terms "irritable heart," and to enlargement as produced by over-strain of the organ, especially in soldiers during long marches. The object of this lecture is to present further facts, derived from private practice, in reference to these topics. Premising the consideration of these topics with a notice of some cases of rupture of the valves induced by the strain incident to violent muscular exertions, and to nervous shock, Prof. Da Costa cites facts showing that among the causes of an irritable heart, in other words, of more or less persistent functional disorder of this organ, is the over-action arising from severe muscular exercise and mental excitement. There can be no doubt that these causes are to be reckoned with others which are more fully recognized, namely, dyspeptic disturbances, sexual abuses, and the excessive use of tea, coffee, and tobacco. The consideration of muscular exercise in this and in other etiological relations is, at this present moment, timely. Public interest is now much directed toward athletic attainments. Young men, and even young women, are stimulated to competition in various feats of muscular strength and endurance, such as running, walking, swimming, lifting, rowing, and gymnastics of various sorts. These attainments have become a very

prominent feature of the collegiate education of the present day. Believing, fully, that, irrespective of evils pertaining to the mind, this excessive devotion to muscular acquirements is fraught with danger to the body, we repeat, the consideration of the pathological consequences in the latter aspect is timely. According to athletic exercises not a small measure of importance in both their mental and physical influences, provided they are kept within judicious limits, we deem it a duty to bear testimony against their being carried to excess as is often done; and among the evils of this excess is functional disorder of the heart.

Does prolonged "strain and over-action of the heart" lead to organic disease, that is, to enlargement? The cases reported in this lecture, in addition to those heretofore published by Prof. Da Costa, show that not only long-continued muscular exertions, but protracted over-action of the heart from mental causes, or from the abuse of tobacco, may lead to enlargement. Admitting this, in order that we may not be led to over-estimate the importance of strain and over-action in this relation, namely, as causative of organic disease of the heart, two things are to be borne in mind: First, enlargement of the heart, occurring independently of valvular lesions, emphysema of the lungs, or renal disease, is extremely infrequent, whereas, functional disturbance of the heart, more or less great and continued, is quite frequent. Hence, the instances of organic disease dependent on strain and over-action must be very rare. Second, a moderate enlargement of the heart, existing without valvular lesions, is not a grave affection. With reference to the latter proposition, it is to be considered that the boundary line between the maximum of the normal volume of the heart, and an abnormal increase of volume, is not easily determined. If the largest heart, within the limits of health, were to be contrasted with the smallest, the difference would be considerable. Here is a liability to error in the interpretation of physical signs. When the signs give evidence of a large heart, is it too large to be embraced within the range of healthy variations? Assuming it to be so, it by no means follows that the condition is one of gravity, except as regards the liability to progressive enlargement. And, with regard to this liability, the fact of enlargement is obviously of importance, especially with reference to the removal of causes, on the continued operation by which the progress of the enlargement depends.

The pathological connection between "strain and over-action" of the heart and organic disease, is a subject claiming further study. Prof. Da Costa has rendered a valuable service by the facts and considerations which he has presented in this lecture, and in previous publications. The accumulation of additional clinical facts relating to the subject is highly desirable. A. F.

ART. XXI.—*Essays on Conservative Medicine and Kindred Topics.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine, in Bellevue Hospital Medical College, New York. 12mo. pp. 214. Philadelphia: Henry C. Lea, 1874.

THE first of the three essays on Conservative Medicine, which form the principal part of this little volume, was published in the November number of the *North American Medico-Chirurgical Review* for 1861. The other two originally appeared in January and October, 1863, in this Journal, and with these our readers are doubtless familiar. The essays on Kindred Topics are

five in number, and were written for different occasions without any expectation—we are told in the preface—of their being associated in a volume; a fact to which the author appeals to explain the repetitions which occur in them. They were all read before medical bodies, with the exception of the last, which is entitled “Divine Design as Exemplified in the Natural History of Diseases,” and which was prepared for a popular audience—the Young Men’s Christian Union of Louisville, Kentucky. It is an attempt to show that the beneficence of providence is manifested even in the infliction of sickness and suffering upon the human race.

By conservatism in medicine Dr. Flint means “that principle which leads the practitioner, in dealing with diseases, to preserve, develop, and support the vital powers. The conservative physician shrinks from employing potential remedies whenever there are good grounds for believing that diseases will pursue a favourable course without active interference.” He is, however, as little chargeable with timidity as with over-boldness, and is prepared to resort to active therapeutic measures when convinced that they are indicated, even carrying a lancet, although it will probably be found to be rusty from want of use. In other words, a conservative physician is one who, being well instructed in medical science, and blessed with a fair share of intelligence and common sense, does not adhere “to principles and rules of practice on account of antiquity, authority, or usage.”

The use of the word conservative, in a sense so different from that in which it is usually employed, does not seem to us to be a happy one; and so little has it found favour that we should be afraid its application, without explanation, to any particular physician, would be regarded as a doubtful compliment. The term conservative surgery has been generally accepted, because its aim is to save rather than remove parts of the body, but, inasmuch as life is sometimes lost in the attempt, this is not a reason for designating as conservative a plan of treatment in which the sustaining of the powers of life forms an essential part. He attributes the change which has taken place in medical thought in this country, during the last half century, very much to the influence of a few New England physicians, dating the change from the publication of an address by Dr. Jacob Bigelow, of Boston, in 1835, on the self-limited character of certain diseases. Unquestionably this address must have had an immense influence upon the thoughtful members of our profession, but we trust it will not be attributed to an intensity of local pride, if we claim for Philadelphia some share, if not priority, in the production of this change. As early as 1812, Dr. Joseph Parrish, familiar with the success which had attended Dr. North’s treatment of spotted fever by stimulants and tonics, abandoned the use of spoliative remedies in typhus fever, during the epidemic prevailing at that time. His success in the management of cases of this disease was so great that it influenced his practice ever afterwards, and through his teaching left its impress upon that of the profession, not only here but throughout our country. In fact in a memoir, written by Dr. G. B. Wood,¹ he is described in terms very similiar to those which Dr. Flint uses when speaking of what constitutes the conservative physician.

The essays on kindred topics are entitled: 1. Medicine in the Past, the Present, and the Future; 2. Alimentation in Disease; 3. Tolerance in Disease; 4. On the Agency of the Mind in Etiology, Prophylaxis, and Therapeutics; and 5. Divine Design as Exemplified in the Natural History of Disease. We have left ourselves too little space to notice these as fully as they deserve. They all

¹ Introductory Lectures and Addresses, 1859, p. 424.

have interest and importance to us as members of the medical profession; being the utterances of one of the most distinguished and successful physicians this country has produced, and they are worthy of their source. In the essay on alimentation in disease he urges the importance and necessity of a liberal supply of food to patients suffering from febrile or wasting disease, regarding their disinclination for it as no greater contraindication to its use than their insensibility to over-distension of the bladder would be a reason for neglect on the part of the physician to relieve this condition. He calls attention to the fact that even where there is a positive repugnance for food it is generally retained and digested. These essays, the work perhaps of Dr. Flint's leisure hours, give us an insight into the principles which guide him in the practice of his profession, clearer perhaps than that which is derived from his systematic writings.

J. H. H.

ART. XXII.—*On the Origin and Development of the Coloured Blood-Corpuscles in Man.* By Dr. H. D. SCHMIDT, New Orleans, La. Read before the Royal Microscopical Society (London), January 7, 1874. Reprint from the Monthly Microscopical Journal, of London, February 1, 1874. 8vo. pp. 23.

THIS meritorious effort to solve one of the already venerable problems, respecting the human red blood-corpuscles, seems to have been the result of a wise determination to utilize, as far as possible, the very young products of conception, procured by the writer, for investigation into the history of the nervous system.

In examining a fresh human embryo about one inch in diameter, Dr. Schmidt found that a minute fragment, snipped out from the wall of the umbilical vesicle (?), was composed chiefly of very large, clear hexagonal cells, with large round nuclei, supported by a delicate fibrous stroma, arranged so as to form fine canals, ramifying through the substance of the membranous wall. These canals were filled with embryonic red blood-corpuscles, many of them similar to the red disks of adult life, but a minority made up of "breeding or mother-corpuscles," ranging in diameter from about $\frac{1}{2500}$ to $\frac{1}{1200}$ of an inch, containing from one to four embryo blood-disks, and, furthermore, distinguished by certain regularly-formed concave depressions on their surface, corresponding to the segments of spheres.

Our author remarks in regard to these mother-corpuscles: "So far as I am able to judge from careful examination of these bodies, as well as of others taken from older human embryos, their process of multiplication consists therein, that in [in that within?] the substance of the mother-body, and near its surface, the separation of a small portion, globular in form, takes place, which represents the embryo blood-corpuscles. Enlarging at the expense of the mother substance, this makes its way to the surface, and finally detaching itself, leaves behind a concave depression corresponding to its form."

By a tissue of ingenious reasoning, largely composed of observed facts, held together, however, by a moderate *stroma* of hypothesis, Dr. S. further endeavours to show that these "mother blood-corpuscles" are identical with the large round nuclei, of the very large hexagonal cells, composing the follicles in the wall of the umbilical vesicle as above described. To the follicular or gland-like structure, of these vesicular parietes (similar to that recently demonstrated by Klein in the omental peritoneum), which Dr. Schmidt has discovered, he

attributes, therefore, the gland-like *function*, of producing the "mother blood-corpuscles," so long known as the nucleated red blood-globules of early fœtal life, and which he believes subsequently give birth to the biconcave disks which alone are found in the adult organism.

These results, contradictory as they are to the conclusions of Kölliker, Klein, Balfour, and others, in regard to the origin of the red corpuscles of the blood, can hardly be accepted as proved, until corroborated by other investigators, but, coming as they do from an observer well known for patient and accurate research, we commend them to microscopists generally as well worthy of careful attention.

J. G. R.

ART. XXIII.—*Electro-Therapeutics.*

1. *Electro-Therapeutics: A Condensed Manual of Medical Electricity.* By D. F. LINCOLN, M.D., Physician to the Department of Diseases of the Nervous System, Boston Dispensary. Philadelphia: Henry C. Lea, 1874.
2. *Clinical Researches in Electro-Surgery.* By A. D. ROCKWELL, A.M., M.D., Fellow of the New York Academy of Medicine, Electro-Therapeutist to the New York State Woman's Hospital; and GEORGE M. BEARD, A.M., M.D., Fellow of the New York Academy of Medicine, Electro-Therapeutist to the Demilt Dispensary. New York: William Wood & Co., 1873.
3. *Treatment of Nervous-Rheumatic Affections by Static Electricity.* By Dr. A. ARTHIUS. Translated from the French by J. H. Eldridge, M.D., Professor of General Therapeutics, Rush Medical College, Chicago. Chicago: W. B. Keen, Cooke & Co., 1874.

1. ELECTRICITY, as a remedial agent, does not seem to lose the confidence of the profession, except when too much is claimed for it. For many years it remained a neglected aid, but has latterly been rapidly advanced by scientific zeal, and is now regarded with general favour. Electro-therapeutists are, however, prepared for disappointments, while not surprised at unexpected, or even startling successes.

"Those who, on the one hand, believe that electro-therapeutics is the one great problem of the future, and those who, on the other hand, suspect that it is all a delusion, will be equally disappointed."¹

It is, as usual, the middle path in which truth travels. At present, too, the tendency is to accept clinical results in this branch of therapeutics even when obtained in apparent opposition to established laws of electro-physiology. Seeming discrepancies it is hoped will be explained with an increased knowledge of electricity and morbid processes. In the words of Dr. Lincoln:—

"It can hardly be necessary to urge upon the reader the inestimable value of having a truly scientific basis for our therapeutical researches. Physiology, however imperfectly known, must be accepted as the best guide we possess; it is a better guide than bare conjecture; and all true progress in therapeutics must bring our practice into increasing harmony with the known rules of healthy and diseased action in the organs of the body."

Dr. Lincoln's work is what it purports to be, a "condensed manual." With the rules for practice there is also a crowd of theoretical views gathered from

¹ Clinical Researches in Electro-Surgery.

the best authorities, both conflicting and coincident, as are at present the opinions of men who use electricity to much advantage and who are eagerly and conscientiously observing its phenomena. The work is also a manual and of a convenient size for reference. The busy practitioner who wishes to refresh his knowledge from a ready source will find here in small compass the present prominent views concerning the principles and practice of electricity.

2. Beard and Rockwell meet "the objection that is often and very properly brought against the early publication of clinical experience, that it is apt to teach either absolute error or half truths" by explaining that this "need not apply, provided the reports are fairly and impartially made, without any attempt to conceal or distort, or in any way warp the evidence to sustain a theory, and no inferences are drawn beyond the requirement of the demonstrator's facts. Cases of absolute or approximate success have been placed side by side with cases of absolute or approximate failure. Cases where every opportunity was afforded for treatment, and cases that failed for lack of opportunity, have been accorded equal prominence. Cases in which the ordinary and accepted methods of treatment would have been sufficient have been mingled with those cases which, under the ordinary and accepted methods, would have been utterly hopeless."

Some of the cases reported are very interesting, and will be found especially so to those who are experimenting in a similar manner.

3. Those who are doubting as to the effects of static electricity, and yet would have their faith strengthened even by uncertain props, will find much comfort in the enthusiastic sentences translated from the French work of Dr. Arthus. The conclusions are far more favourable to this method of application than those attained by other experimenters. Too much seems demanded, unless other observers are wrong, and one's gorge rises, granger-like, against a spirit of monopoly, which, with rare temerity, stretches its possessive pronoun over one vast domain of the ubiquitous fluid, and claims it as "static electricity—our electricity." It were a "consummation devoutly to be wished," that one-half might be accomplished by the healing influence of electricity which, with a hope perhaps prophetic, is anticipated by its friends. At present there are barriers in the way, but we have reason to believe that our knowledge both of the science and art is still very crude and incomplete.

F. A. B.

ART. XXIV.—*Report of the Board of Health of the City and Port of Philadelphia, to the Mayor, for the year 1873.* 8vo. pp. 255.

WE learn from this report that the health of Philadelphia has been generally good. The year 1873 has proved to be unusually free from epidemic diseases. The summer heats of July were far less oppressive than in 1872, and young children did not furnish so large a mortality as before.

The Board adverts to the imperfection of the returns of births, and mentions with approval the system, pursued in some cities, of house to house visitation for collection of these facts. We fear that no other method will prove effective in this country.

The exemption of Philadelphia from contagious diseases, during the year, is well shown by the figures exhibiting the admissions into the Municipal Hospi-

tal. Only forty-four were received against nearly fifteen hundred the previous year.

The very great diminution of applications for vaccination, since the subsidence of the epidemic prevalence of variola, is adverted to with regret, and as indicating the necessity for bringing to bear upon public indifference and neglect some stronger influences than now prevail. Whether any means short of compulsion will suffice, is a question upon which the Board does not take a very decided stand.

In regard to our water supply, the report urges the abandonment of the present Delaware works, and the establishment of new pumps above Tacony. The enforcement of existing laws for the protection of Schuylkill water from pollution at Manayunk and Falls Village is earnestly demanded.

The great need of public baths is referred to. It surely is a crying shame that it is necessary to call attention to this matter year after year.

In regard to intra-mural interments, several pages are quoted from English parliamentary reports. The views taken seem to us rather extreme, when applied to any condition existing or likely to exist in our city. But it is better to err on the side of safety and over-caution than to run any possible risk. The establishment of mortuaries, within the city, to which the funeral escort might convey the dead, and from which they should be quietly removed to extra-mural cemeteries, is recommended for the benefit of the poor and people of moderate means.

Those who sometimes feel a little disposed to complain because the Board does not secure a perfectly clean and spotless city, may yet find reason to rejoice and be thankful when they read the record of the nuisances which its officers have abated. We believe that much good would result if citizens, instead of abusing the Board in the papers in general terms, would make formal complaint as to the particular evils which come under their notice.

Complaint is made that the Board has not sufficient power legally to compel the demolition of tenements in certain districts. Nothing short of entire removal of the buildings in some localities can satisfy the hygienic requirements.

The organization of grand abattoirs is advised in place of the hundreds of small establishments which now exist.

We earnestly hope there may be no delay in carrying out one recommendation of the Board, viz., the use of the improved pneumatic apparatus for emptying cesspools. The present primitive and obscene method is simply disgraceful.

The low death-rate of the city is regarded with some satisfaction. The roomy accommodation afforded to the poor—itsself the result of the topographical peculiarities of the site—is, we believe, more to be credited with the low mortality than is any very prevalent attention to the laws of health on the part of the population. As it is, the mortality is but slightly less than that of London, where the drinking water is very bad, and abject poverty vastly more common.

A suggestion is made that the water used for sprinkling the streets should be impregnated with cheap chlorides, as a sanitary precaution.

It is claimed that, upon the whole, the street-cleaning has been fairly done, and better than in 1872. There is no doubt of the truth of one point here mentioned—it is impossible to keep decently clean the wretched apologies for pavements which disfigure most of the streets of Philadelphia. As to the prevailing tendency to cast all manner of rubbish into the streets, to obstruct these, and to tolerate their obstruction by others with building materials, *débris*, earth from cellars, lumber, old wagons, and cumbrous matters whose

owners have no convenient storage room for them—these evils, we fear, indicate a great lack of proper public spirit and honest local pride.

The absolute number of marriages registered is greater than in any preceding year, though in proportion to population slightly less than in the three years 1864, 1865, and 1866. Nothing is said as to the degree of confidence to be placed in the correctness of the record.

The number of births reported is larger than ever before. Concerning this branch of the registration, it is confessed that the returns are sadly imperfect. Inquiry from door to door, as has recently been successfully practised in Boston and Providence, is recommended by the Board as the only trustworthy method of gaining the full facts. An unusual proportion of male infants continues to characterize the births of Philadelphia. In 22,000,000 English births, male children exceeded female in the ratio of 104.8 to 100. Here, for thirteen years, the ratio has been 109 or 110 to 100. This marked predominance is by some deemed to be an indication of a prosperous and healthy social condition.

The mortality of the year was not far from the average. As compared to that of 1872 it was considerably less, owing principally to the moderation of the summer heat. As usual, July stands at the head of the months in the order of mortality.

The great number of deaths among young children remains a matter of the most painful interest. True, indeed, the ravages of cholera infantum have been less terrible than before. But we fear this partial relief was due more to atmospheric causes than to intelligent care. Still we heartily sympathize with the Board in the belief that the "children's excursions," and the "rules for the management of infants," may have saved many lives. The suggestion of the Board that summer homes for sick children be established, has already been adopted on a small scale, and has proved as salutary as could possibly have been anticipated.

Cerebro-spinal meningitis, we notice, prevailed to nearly three times the average extent for ten years. The deaths were 246, nearly 60 per cent. being children under ten years, and one-half occurring in the second quarter.

The vital statistics of this report are exhibited in the usual variety of forms. The tables seem intelligently arranged, and not unfairly interpreted. We are glad to see that the meteorological facts of the year are presented, both by themselves and in connection with various diseases.

An attractive as well as useful feature in the volume is the use of coloured charts, to show to the eye the comparative rise and fall of mortality by particular diseases—and in some also the variations of temperature, pressure, and humidity—throughout the months or weeks of the year. These are admirably designed by Dr. Ford, and well executed.

The longest mortality table—analyzing deaths according to character of disease—is a little obscure at first sight. Instead of going through the whole disease-list according to sex and age, and then again according to nativity and wards, these different exhibits occupy alternate pages.

Many of the tables present facts which are very curious and interesting, but for which we must refer our readers to the work itself.

Two appendices close the volume. The first is the report of the Municipal Hospital; and the second is the original report of registration facts, presented to the Board, and from which the main report is made up. Owing to a fortunate exemption from contagious diseases, the former deals with very small numbers, and the latter calls for no especial mention.

The report is well and correctly printed, and every way creditable to the City and to its compilers. Dr. Ford deserves the thanks of the profession, as well as those of the public, for producing such good work.

B. L. R.

ART. XXV.—*On Hospitalism and the Causes of Death after Operations.* By JOHN ERICHSEN, F.R.C.S., etc. Small 8vo. pp. viii., 107. London: Longmans, Green & Co., 1874.

It is now about five years since the late Sir James Y. Simpson stirred up the wrath of British surgeons, by his wholesale indictment of hospitals as being "banes rather than blessings" to society, and it is more than two years since in the pages of this journal we endeavoured to investigate the truth of his charges, and to show how little his accusations could bear the test of critical examination. Mr. Erichsen, himself (as our readers know) a hospital surgeon of large experience, has lately revived the term "Hospitalism," though in a somewhat modified form, and we have looked with a good deal of interest over the four lectures which he has collected in the small volume now under consideration, to see what, if any, new light he might have thrown upon the subject, and what means he might have had to suggest for the prevention of that large mortality after operations which every operator has to deplore.

"By 'Hospitalism' I mean," says Mr. Erichsen, "a septic influence capable of infecting a wound or of affecting the constitution injuriously."

This septic influence he believes to result from "over-crowding," which he explains to be not necessarily the placing of more patients (numerically) in a ward than it should receive, but the aggregation of a disproportionately large number of severe and, particularly, of suppurating wounds. Mr. Erichsen's facts probably will not be disputed. Of course a ward containing on an average twenty cases of compound fracture, will, in a year, furnish more deaths from pyæmia than a similar ward which habitually contains but ten cases of compound fracture and ten of simple fracture, and more than this, the first or "over-crowded" ward will probably furnish a larger number of deaths proportionately; pyæmia is itself, in a certain sense, probably contagious, and erysipelas and hospital gangrene (which often lead to death *through* pyæmia) are undoubtedly so, and it is no matter of surprise therefore that, where plenty of pabulum exists in the way of depressed constitutions and open wounds, one of these affections accidentally introduced should spread more destructively than where the suitable material is wanting.

But this is, to our mind, no argument against *hospitals*, but against hospitals which are *badly managed*. If the pressure upon the resources of a hospital is so great that all "walking cases" have to be excluded, and that even patients with broken legs or thighs must be bundled up in starched or plaster of Paris bandages and turned off to be treated as out-patients, no doubt those who are so severely injured that they *must* be taken in, will have less chance of recovery when crowded together, than they would have had if judiciously distributed through the wards of a larger or less busy hospital. And the proper remedy is obviously not (as Sir James Simpson suggested) to tear down our present buildings and substitute "wooden, or brick, or iron villages," but to enlarge the hospitals now existing, or, where this cannot be done with advantage, to build new ones with all the hygienic improvements which modern science has indicated; and to educate the authorities of hospitals to the conviction that it is not the highest praise of a surgeon to have operated on the largest number of severe cases, but to have done the greatest good to the greatest number of patients, and to have saved the largest number of lives.

Mr. Erichsen's suggestions, as to the means of diminishing mortality after operations, are judicious as far as they go, and consist essentially in enforcing

cleanliness and avoiding "over-crowding." We think he hardly attributes sufficient influence to the constitutional condition of patients before and after submitting to an operation, and to the consequent importance of suitable hygienic and constitutional treatment; in this respect we think the teaching of the author's "Science and Art of Surgery" better than that of the volume now under consideration.

Although Mr. Erichsen has revised these lectures since their first appearance in the English journals, there are some marks of hasty composition still apparent; we would particularly instance the sentence at the foot of page 19, which, taken as it stands, implies that the author has never known pyæmia to occur after a compound fracture, except when the limb has been amputated.

J. A., JR.

ART. XXVI.—*Recent Works on Cholera.*

1. *Report on the Cholera Epidemic of 1872, in Northern India.* By J. M. CUNNINGHAM, M.D., Sanitary Commissioner with the Government of India. Quarto pp. 150. Calcutta: Office of the Superintendent of Government Printing, 1873.
2. *A Report of Microscopical and Physiological Researches into the Nature of the Agent or Agents producing Cholera.* By T. R. LEWIS, M.B., Assistant Surgeon H. M. British Service; and D. D. CUNNINGHAM, M.B., Assistant Surgeon H. M. Indian Service, attached to the Sanitary Commissioner with the Government of India. 8vo. pp. 112. Calcutta: Office of the Superintendent of Government Printing, 1872.
3. *Observations on the Pathology and Treatment of Cholera. The Result of forty years' Experience.* By JOHN MURRAY, M.D., Inspector-General of Hospitals, late of Bengal. 12mo. pp. 58. London: Smith, Elder & Co., 1874.

The same. New York: G. P. Putnam's Sons, 1874.

THESE three books all treat of cholera, and although they differ materially in the point of view from which they regard the disease, they will be most conveniently considered together. The first on the list is an admirable report by Dr. J. M. Cunningham on the cholera epidemic of 1872, in Northern India, the total mortality from which in the provinces under British rule reached 165,458. The book contains a fine map of India, showing the localities which suffered in the epidemic, and is divided into two parts. In the first, questions of a general character connected with cholera are discussed; the second contains notes of the various outbreaks of the disease, arranged in seven different sections, as follows: Section I. contains a very few words of description of the place where the outbreak occurred; in No. II. are given details of the outbreak; in No. III. are related all the facts bearing on the question of importation and communication; No. IV. is devoted to the little information obtainable in regard to the meteorology; No. V. contains a short account of the local conditions, including the water supply, the drainage, ventilation, overcrowding, and the like; No. VI. describes the preventive measures adopted and their apparent results, and No. VII. embraces the statistics, in tabular form, concerning the history of the place as regards cholera in former epidemics. In addition to this there are several other tables, showing, 1st, the distribution of the deaths from cholera through the different provinces of India; 2d, the degree to which different regiments suffered in the epidemic; and 3d, the number of cases

occurring in the jails of the Bengal Presidency. As there were one hundred and eight of these outbreaks, it will readily be seen that this part of the book contains a vast deal of valuable information.

As we have said, the first part of the report is of a more general character, it being given up principally to the discussion of such subjects as the following: 1st. The contagiousness of cholera. 2d. The influence exerted by human intercourse in its propagation. 3d. The part played by drinking water in disseminating it. 4th. The effect in preventing this of isolation and of quarantine. The conclusions which Dr. Cunningham draws from his observations in regard to all these points are at variance with the opinions most generally entertained. He thinks, in the first place, that the contagiousness of cholera is not proven, in fact it is perhaps nearer the truth to say that he does not believe it to be at all contagious. In support of this view, he shows that the medical and other attendants upon the sick did not suffer in a larger proportion than any other class. Of all the medical officers in public employ, not one was attacked except an assistant surgeon who was suffering from dengue, and had not attended a single case of cholera. The attendants very often escaped altogether. For example, of forty native attendants at Fyzabad, none were attacked; not one of the large number employed with the different regiments at Lucknow; not one out of seventy native servants at Dugshaje; not one at Jullundur. In those cases in which the attendants did suffer, and there were many such in the outbreaks reported by the author, he ascribes the seizures rather to the locality in which the men lived than to the fact that they were brought in contact with cases of the disease, maintaining that they enjoy an entire immunity when the sick are removed from the infected locality. As a further argument against the contagiousness of the disease, the author adduces the fact that the number of persons attacked in the same town or city during different epidemics varies considerably even where all the surrounding conditions are favourable to the spread. In 1869, no less than 60,000 deaths from cholera took place in the Central Provinces. In 1870, the number was 107. In 1871, it was only 19. In 1872, it rose to 1592. It is always a difficult matter even in dealing with a disease which is confessedly contagious, to determine in particular instances how much influence in causing the attack is owing to locality and how much to contagion, and we have no doubt that the sudden outbreak of cholera in a house, barracks, or camp, is frequently much better explained by reference to the former than to the latter. Still we are not prepared to leave contagion entirely out of the question. Dr. John Murray, in a critical review of this report,¹ asserts that if nurses have escaped in some places they have suffered severely in others, and that a careful review of the statistics will show that this class furnishes quite as many, if not more, cases than any other. The reports of civil hospitals in Paris show that during the late epidemic there, out of 291 cases treated for cholera, 100 occurred in patients in the hospitals. It is true this may be nothing more than a coincidence, but inasmuch as it is not an isolated instance, we are inclined to believe that it is something more.

Very closely connected with the question of the contagiousness of cholera is that of its propagation by human intercourse, and we find that here again Dr. Cunningham takes the negative side. The disease, he says, could not be traced to importation in one of one hundred bodies of troops, prisoners, and other communities which were made the subjects of careful medical observation. He avers that there is positive evidence that the disease did not spread by pilgrims returning from Hurdwar Fair in 1872, and so far from this fair having been in other

¹ British Medical Journal, January 17, 1874.

years the great centre from which cholera radiated, it has been singularly exempt from it. In 1783, there was a severe outbreak, but this is the only mention of cholera in the early years. In 1857, the pilgrims suffered; but with this exception the disease appears to have been unknown among them from 1854 to 1866. In 1867, there was a great outbreak which has been described in the Fourth Annual Sanitary Report. From 1867 to 1873, the annual fairs have passed without any sickness beyond one or two isolated cases. Again, there is no evidence that the disease was carried or disseminated along the great lines of communication. On the contrary, it spread through provinces in which there are no railways, and in which the amount of traffic is small. Moreover, the rate at which the disease progresses is not more rapid now than it was formerly before the introduction of steam communication. But, perhaps, the most remarkable fact remains to be told. The disease appeared among the boys at St. Peter's College, at Agra, on the 5th of July, and with such violence that by midnight there had been 21 cases and 6 deaths. By the 10th, when it ceased, there had been altogether 63 cases and 34 deaths out of a strength of 176. On the 6th of July, 65 of the boys were sent to their friends, either in Agra or other stations, some of them very distant, and yet in no instance did one of the 65 boys, so dispersed over the country, communicate the disease to the homes into which they were received. This is all the more remarkable because 12 of them were attacked after reaching their destinations, and 5 died, and in not a few instances the overcrowded rooms, occupied by large families into which they were admitted, were most favourable for the spread of cholera. It is only proper to add, that the correctness of some of the statements in regard to the Hurdwar and other fairs have been impeached by Dr. Murray in the review to which we have previously referred.

Dr. Cunningham assails very energetically the theory that the spread of cholera depends in any degree upon the use of drinking water polluted by cholera evacuations, supporting his position by several arguments which have certainly a good deal of weight, such as the following: 1. Medical officers in charge of troops, among whom an outbreak has occurred, almost invariably express the opinion that no connection can be established between it and the water supply. 2. The geographical distribution of the disease is opposed to any such view. 3. In the whole course of the epidemic there was not a single instance in which the cessation of the disease could be attributed to the disuse of any particular water. 4. The difficulty of accounting for the almost simultaneous disappearance of the disease in different regiments and other communities on this theory. 5. The number of cases occurring do not bear any proportion to the degree to which, accepting the theory, the water may be supposed to be contaminated. "In Lahore City, for example, taking the number of deaths shown in the registration returns to represent half of the number of attacks, 10 cases in June produce 86 in July, while 476 in August produce only 10 in September, and such is the history of the disease not in a few places only, but all over the country. In order to account for the results according to the water theory, the accidental pollution of the many sources of water supply is supposed to occur at the commencement, just at the very time when it is of all others least likely to occur." This theory will not account for the fact that, in one outbreak at least, the native troops almost escaped, while the European suffered severely, both drinking the same water. In the epidemic at Peshawur the Royal Artillery at the end of the stream, where the pollution would naturally be greatest, escaped almost entirely. The history of the outbreak at St. Peter's College to which reference has already been made, is also opposed to this theory. "The water used by the boys," to quote from

the report, "was drawn from a well common to the college and a considerable native community, among whom so far as is known no cases occurred. It may be argued, that, although nominally drawn from this source, in reality it was very likely taken from the college well employed in former years—a well in most dangerous proximity to the old latrine, which is practically a well of filth close beside it. But this explanation accords with the facts no better than the other, for the day boarders, 27 in number, who drank of the same water as the boarders and orphans, and drank largely too—as I was assured, and as might naturally be expected in that very hot weather—all escaped with the exception of one. Anxious to ascertain the circumstances under which the boy was attacked, I found, on inquiry, that he was the only one of the day scholars who lived close by—a fact which points strongly to localization, not to water." But the strongest argument that can be brought against this theory, is the fact that the disease has disappeared among troops who, continuing to draw their water from the same source as before, have moved their camp a short distance from the infected locality.

The next series of facts which Dr. Cunningham considers, are those relating to measures adopted for the prevention of the disease, and most important among these are quarantine and isolation. It will not surprise our readers to hear that he takes strong ground against the enforcement of either of these measures, believing that they have never been effective in arresting the spread of cholera, that they occasion great inconvenience to the people, and interfere with commerce, and that they prevent what is really the best of all prophylactic measures, the removal of troops or other bodies of men from an infected to a healthy locality. He insists upon the necessity for these removals, wherever practicable, to a considerable distance from the place where the disease has broken out. If this is impossible, a slighter change will frequently be sufficient to check the dissemination of the disease, although it will sometimes be found to fail. "The arguments against a general quarantine," he, however, adds, "do not apply to the discouragement of fairs and the diversion of streams of pilgrims at those times when cholera threatens, provided those measures are taken discreetly. The conditions under which pilgrims travel and congregate are essentially insanitary conditions, which favour the appearance and spread of disease, and in so far as these conditions are obviated good will occur, both to the pilgrims themselves and the community generally."

Nor is he disposed to overlook the advantage to be derived from carrying out all sanitary reforms, insisting upon the importance of thorough drainage and ventilation as well as upon the necessity of improved means for the supply, and still more perhaps for the distribution of pure water.

We have placed these views of the author before our readers with very little comment of our own. We cannot refrain from expressing our agreement with Dr. Murray in his opinion, that an official report such as the one under review, in which it is maintained that cholera is not contagious, will certainly have a tendency to render people careless in carrying out the necessary hygienic measures to prevent its spread.

2. The report of Dr. Lewis and Mr. Cunningham is divided into three parts: the first containing a description of the microscopical appearances of the blood in cholera; the second giving an account of a series of experiments on the action of solutions of organic matter from various sources and in various stages of decomposition on living animals; and the third, on the effect of section of certain nerves. The observations which have been recorded are reliable because no observation has been included which has not been witnessed by both of the experimenters.

The observations on the blood were made immediately after its removal from the body and from day to day for some time thereafter. For purposes of immediate examination, specimens of blood were placed under thin covering glasses, individual specimens being prepared without any reagent, mounted in acetate of potassa, after exposure to the vapour of a two per cent. solution of osmic acid, or mounted in acetate of potassa or acetate of soda without previous exposure to the osmic fumes. When this was done the red corpuscles appeared unaltered in most cases; and but few leucocytes were present. Not the faintest trace of bacteria was detected in any instance, although they were carefully searched for under powers varying from the $\frac{1}{4}$ to the $\frac{1}{2}$ *à immersion*. There were, however, as a rule, numerous specimens of minute irregularly rounded bodies having a refraction like that of leucocytes, and varying considerably both in size and form; they occurred sometimes in patches or heaps, and in other cases were irregularly scattered over the fields. No structure could be detected in them, and they appeared to be mere fragments of bioplasm.

For continuous observations on the changes taking place in the blood after its removal from the body, wax-cells were employed. A small drop of blood having been received on the centre of a carefully-cleaned covering-glass, the latter was pressed down on the wax-cell and hermetically sealed. The cell was deep enough to prevent the blood from coming in contact with the slide, and therefore allowed its free exposure to the included air. The fragments of bioplasm observed in fresh blood were also noticed in these preparations, and were seen to grow larger, to undergo various changes in form, and to be endowed with the power of motion and of multiplication. Later these movements ceased, and they then resembled in refractiveness and general aspect pus-cells, in which the vital movements have ceased. Still later the bioplastic masses broke up into molecular flakes which might very readily have been mistaken for flakes of monads, and might have been supposed to arise by aggregation, had the processes by which they were formed not been followed out. These bioplastic bodies are supposed to be the origin of those found in the evacuations of cholera-patients, an opinion which is corroborated by the fact that the presence of red blood corpuscles in the stools renders it certain that blood escapes into the intestines in cholera. It is true that similar bioplastic bodies are observed in the blood of health, but not in anything like the same number. So that the authors confidently assert, that, given two samples of blood, one being choleraic and the other healthy, although to the naked eye, or at first sight under the microscope, no difference might be discovered, they could pretty accurately state on the second day to which of the two sources the specimen should be referred.

In regard to the relative frequency in which low organisms are present in healthy blood and in that of cholera-patients, the authors say that in 22 specimens of healthy blood examined some days after removal from the body, distinct evidence of monads or bacteria were only once observed and fungal filaments only appeared on three occasions, or at the rate of about 13 per cent. In the blood of cholera-patients obtained during life, but kept in wax-cells for a few days, monads or bacteria were only observed on two occasions in 39 specimens, and fungi were seen to develop in six preparations, just two per cent. more than in healthy blood, and in every instance but one, the fungus was observed to have entered the preparation from without. The absence of these low forms of life is equally conspicuous in the preparations of cholera-blood obtained after death.

The second part of the report contains a detailed account of a series of ex-

periments on the introduction of organic fluids into the system, classified as follows: 1. Experiments on the injection of pure cholera-fluid into the veins of animals; 2. Injections of aqueous solutions of choleraic material into the veins of animals; 3. Injections of organic solutions other than of choleraic nature into the veins of animals; 4. Experiments on the introduction of choleraic and other solutions into the peritoneal cavity of animals. Dogs were the subject of these experiments. In thirty-two experiments of the first class in which the material used was either fresh or had been kept for varying lengths of time, sixteen deaths occurred; thirteen evidently from the direct action of the putrefying material exerted through or upon the blood; two apparently from shock, and one dog was killed owing to erysipelatous inflammation of a severe kind attacking the wound. These are consequently left out of the calculation. The mortality, therefore, resulting from the direct introduction of choleraic dejections in quantities varying from two to six drachms may be set down as amounting to about 43 per cent. Of seven cases in which the choleraic material injected into the veins had been more or less diluted with water, two died, which is equal to about 35 per cent. There were twenty-one experiments on the introduction of solutions of ordinary alvine discharges carried out; nine of the animals died; three of these deaths were attributed to shock, which, for the sake of uniformity, was also left out of the calculation, thus leaving six deaths, or a mortality a little over 33 per cent., about 2 per cent. less than the mortality from the injection of the diluted choleraic material. Twelve experiments on the effect of injecting the peritoneal cavity with solutions of organic materials are recorded. In four of them choleraic material was used. In the others ordinary alvine discharge, decomposing solution of beef, and peritonitic fluid, recent and decomposed, were injected. Deaths only occurred in three cases, namely, two after the introduction of a fluid which had just been obtained from the peritoneal cavity of another dog, and one after the introduction of a solution of decomposing ordinary alvine discharge. The remaining dogs were all killed within twenty-four hours of the operation, and all, whether they died or were killed, presented the same marked lesions at the autopsy. The most prominent and constant *post-mortem* phenomenon in all the cases, no matter in what way the putrefying substance had been introduced, was a sanguineous exudation into the small intestine, more or less evenly distributed over the mucous membrane, which, together with its epithelial coating, was intact. That portion of the intestine, a foot or two above the ileo-cæcal valve, which is more apt to be congested in cholera, escaped in almost every instance being materially affected. In fully one-half of those cases in which injections were made into the peritoneal cavity, pericarditis, more or less distinctly marked, was observed; that portion of the pericardial sac in immediate connection with the diaphragm, together with that immediately attached to the sternum, being the part usually affected. "Perhaps," the authors say, "the origin of this may be explained by one of the series of *observations on the anatomy of serous membranes* lately published by Drs. Burdon Sanderson and Klein, which shows that when various colouring matters are introduced into the abdominal cavity the lymphatic vascular system of the diaphragm becomes completely injected, as *also the sternal vessels and sternal glands*." It will be seen from the result of these experiments that it is not necessary to agree with Dr. B. W. Richardson, of London, that, because pericarditis follows the injection of lactic acid into the peritoneal sac, lactic acid is therefore the cause of rheumatism.

Although the injection of choleraic material and the organic matter into the veins produced lesions of the intestines, yet these differed from those found in

cholera, and the authors therefore performed a series of experiments, with the object of determining whether or not section of the splanchnic or mesenteric nerves would give rise to an increased secretion into the intestines. In all of the experiments but two, in which the mesenteric nerve was only partially divided, there was no hypersecretion of fluid. The two exceptional cases may perhaps explain, to a certain extent, the pathology of cholera, indicating that partial paralysis of the intestines is one of the most important lesions in the disease.

The book is illustrated by plates showing the changes occurring in preparations of the blood in cholera.

3. The results of observations which have extended over a period of forty years, when made by a physician who has enjoyed such exceptional advantages for the study of cholera as Dr. Murray has, ought certainly to possess great value, and it is therefore with a feeling of disappointment that we find, after a careful examination of his book, he has been able to add absolutely nothing to our knowledge of the pathology of this disease and very little in regard to its treatment. He believes, that the first stage of the disease is not, as is generally supposed, that of diarrhoea, but that preceding this there is a condition which may be generally recognized, and which he designates as *malaise*. In this stage the disease is very amenable to treatment, and it is consequently very important that this should be begun before the supervention of diarrhoea. We therefore regret that he does not describe the symptoms of this malaise so fully and clearly, that we should have no difficulty in distinguishing it from that which precedes the occurrence of almost every other disease, or from that which is simply dependent upon bodily or mental fatigue. Nor are the rules which he lays down for its management much more satisfactory. There is a clear indication, he says, to assist nature in promoting digestion by all ordinary means, aided by those that have been found useful under particular circumstances, and at various seasons. The feelings of the patients will often lead them to have recourse to ardent spirits, but while the use of these in moderation, or at meals, need not be interfered with, their use in excess is followed by depression, which predisposes the system to an attack of the disease. In fact, Dr. Murray regards stimulants as the cause of a good deal of mischief in cholera. The temptation to prescribe them is very great, especially during the stage of collapse, but if given in large quantities at this time they are very apt to increase the fever, and the head symptoms of the succeeding stage. It is better, therefore, to substitute them by the diffusible stimulant, the action of which is more evanescent.

The only rational system of treatment in cholera, Dr. Murray holds to be, that which affords the most hope that the poison upon which it depends will be eliminated from the body. It has been proposed to do this by the administration of purgatives, but increased action of the bowels tends to get beyond control, and to induce fatal collapse. He therefore endeavours to fulfil this indication by remedies which increase the secretions of the liver, lungs, and kidneys. With this view he recommends calomel in moderate doses, entertaining apparently no doubt of its power to stimulate the secretion of bile. He, however, condemns its use in large doses, when it of course acts as a purgative, and may do great harm. During the stage of collapse it will not be absorbed, and should not be given at this time, since the full action of the medicine will not unfrequently manifest itself as soon as reaction has been established. Quinia is another drug upon which he places much reliance, prescribing it in small doses in the stages of malaise and diarrhoea, and in large doses during collapse, just before reaction is anticipated.

The indications furnished by the different stages of cholera require to be met by different remedies, and we therefore shall probably use the space at our command to the best advantage, by considering these in the order in which they are presented. Thus in the stage of diarrhœa, the prescription which our author has found most useful is an anodyne carminative, composed of opium one part, black pepper two parts, and assafoetida three parts, divided into five grain pills, and given with a little cold water, after every second stool. This will be found to be more efficacious than one containing any of the pure astringents, such as gallic acid, acetate of lead, or sulphate of iron, which, while arresting the discharges, do not alter their character. During this stage, the disease sometimes assumes a distinctly periodical type, and is characterized by profuse cold perspiration. Here quinia is the sheet-anchor of hope, given in large doses, with opium two hours before the exacerbation is expected. When collapse occurs, the indication is to sustain the strength of the patient until it gives place to reaction. The intense thirst, which is a distressing symptom, is best relieved by small quantities of ice-water, given at short intervals, and medicated by the addition of an acid, as sulphuric or acetic, or by an alkali, as carbonate of ammonia or soda, according to the inclinations of the patient. An effort should be made to rouse the patient by the internal administration of tincture of camphor, ammonia, or decoction of red pepper, and by the external application of heat and the rubefacients. When food is given it should be in a liquid form, and the author speaks highly of a watery extract of meat, made by macerating beef in an equal weight of water to which a few drops of muriatic acid have been added. With the object of replacing the deficient secretions, he administered in some of his cases, and he asserts, with very good results, half a drachm of bile, and fifteen grains of pepsin. If the stomach rejects these remedies, the exhibition of hot saline enemata will frequently, he says, relieve the cramps and uneasy pains in the abdomen, and very often arrest the purging, and hasten the occurrence of the reaction. In addition to excessive purging, he condemns bleeding, the actual cautery, and also the use of chloroform, chlorodyne, and ether, which have a tendency to render the subsequent reaction violent. He has used morphia hypodermically with advantage in relieving pains and allaying vomiting, but he has seen little good follow the endermic exhibition of other remedies, except perhaps of quinia. It is scarcely necessary to add that he cautions us against allowing a patient in this stage to sit up, or to use any unnecessary exertion, as the syncope, which sometimes occurs under these circumstances, is not unfrequently immediately fatal.

We find nothing that is new suggested in the treatment recommended for the stage of reaction; our efforts being necessarily limited to the moderation of the fever with its attendant brain symptoms, and to the re-establishment of the urinary secretion. The remedies which he employs to promote these ends are chlorate of potash, digitalis, nitric ether, nitre, and demulcent and diluent drinks. Ice may be applied to the head, and in cases where vomiting is an annoying symptom may be administered internally, conjointly or alternately with effervescing draught or small doses of hydrocyanic acid. Particular attention is of course to be paid to the diet, and if all articles of food are rejected, an attempt should be made to nourish the patient by the rectum.

Dr. Murray's concluding remarks have reference to the hygienic measures which he thinks it proper to take during an epidemic of cholera. As the primary source of the disease is the human body, there is danger, he says, in its proximity and safety in its isolation. He therefore recommends that cholera patients should be treated in special hospitals or in the tents, and have special

attendants assigned them, except, of course, in cases where their position in life permit them to be isolated, and to be comfortably treated at home.

We have endeavoured in the above *resumé* of his treatment to do full justice to Dr. Murray, but we think the readers of this Journal will agree with us in thinking, his book contains nothing on the treatment of cholera with which they are not already familiar.

J. H. H.

ART. XXVII.—*History of the American Ambulance established in Paris during the Siege of 1870-71, together with the Details of its Methods and its Work.* By THOMAS W. EVANS, M.D., D.D.S., Ph.D., etc. London: Printed for the author at the Chiswick Press, and published by Sampson Low, Marston, Low & Searle, 1873. Imperial 8vo., pp. xxxviii., 694.

THIS large but beautifully printed volume is so large, so beautiful, and—in comparison with the medico-military volumes issued by the American Surgeon-General's Office—devoted to so very small a subject, that it may, without any feeling of disrespect, be called the GLUMDALCLITCH of military surgery. From the preface we learn that it is to form Vol. I. of Dr. T. W. Evans's "General History of 'Sanitary Associations during the Franco-German War of 1870-71,'" a work which (if every part is to contain as many words in proportion to the extent of its subject matter as this one) will rival in voluminousness those historical novels of which we hear that Oriental nations are so fond, and the concluding pages of which may be expected to appear at or about the time of the Greek Kalends.

The present volume contains four distinct essays, the first giving *An Account of the Formation of the American International Sanitary Committee of Paris, together with the History of the American Ambulance*, by Dr. EVANS himself; the second, consisting of three parts, (1) *On the Establishment of Army Hospitals*, (2) *On Tents and Tent-barracks*, and (3) *On the Special Organization of the American Ambulance*, by Dr. EDWARD A. CRANE; the third, *On the Surgical History of the American Ambulance*, by Dr. JOHN SWINBURNE; and the fourth, *On the Medical History of the American Ambulance*, by Dr. WILLIAM E. JOHNSTON. An appendix is added, giving a list of the persons who served in the American Ambulance, and an explanation of the Ground Plan of the Ambulance, which forms one of several large plates bound at the end of the volume.

Of the four essays, one only, that of Dr. Crane, has impressed us favourably; it, indeed, displays a great deal of antiquarian research, as well as of practical familiarity with the principles of hospital construction, and were it separately printed, in a portable and inexpensive form, would, we doubt not, be received with much favour, as furnishing really the best account of the origin and history of military hospitals which is accessible to the English-reading public. This essay deserves to be honourably excepted from the unmitigated censure which the judicious critic must bestow upon the rest of the volume.

Dr. Evans's own contribution to the work constitutes one of the most lamentable displays of vanity and self-glorification which we have ever met with. Its most salient features are the "huffiness" with which he tells how he and his associates were snubbed (and we confess, as it seems to us, not undeservedly) by the authorities of the United States Sanitary Commission in this country, and the ill-concealed satisfaction with which he lets the reader know that the

"illustrious Lady," who has lately resided at Chiselhurst, "entrusted her personal safety to him," and that "more than willingly he accepted all the responsibilities it involved. He suddenly left Paris, without giving a word of explanation to any one, and after a few days happily succeeded in conducting Her Majesty, in safety, to the more secure and peaceful shores of England"—where, moreover, the exigencies of war rendered it convenient for him to stay himself until the close of the conflict.

Dr. Swinburne's and Dr. Johnston's essays give an account of the actual amount of professional work done by the Ambulance, the former having had under his care 247, and the latter only 24 patients, a grand, or shall we rather say a small, total, of 271 cases, being a fraction more than one for every three pages of the big book in which their treatment is celebrated. Dr. Swinburne, after complimenting the "gentlemen volunteer aids" who, in selecting patients for him, "made it a point to seek and take in the most severely wounded, and particularly those having fractures," adds:—

"These facts explain why, among the 247 surgical cases treated at the Ambulance, there were 126 compound fractures. Notwithstanding this great number of fractures, and the causes previously enumerated, only 47, or a little over 19 per cent., have died of their wounds."

This statement appears to us somewhat liable to be misunderstood: in the first place, as we learn from a foot-note, the 126 fractures occurred in only 114 patients; and in the second place, of the 47 deaths, all but two occurred in cases of compound fracture; so that, although the mortality of the whole number of cases was but a little over 19 per cent., the mortality in cases of compound fracture was over 39 per cent., while the 133 patients who had not broken bones, and of whom only two died, cannot reasonably be believed to have been the subjects of extraordinarily severe injuries.

Dr. Swinburne reiterates at some length the doctrines which he has heretofore advanced as to the treatment of fractures, and particularly as to the treatment of fractured thigh by extension and counter-extension alone, without the aid of lateral support; he also goes out of his way (as it seems to us) to accuse Dr. Gurdon Buck of "a very delicate kind of professional plagiarism," in recommending the treatment by weight and pulley, of which, as is well known, Dr. Buck has been, for the last ten or twelve years, an enthusiastic advocate. We are not aware that Dr. Buck has ever claimed to be the originator of the employment of *extension and counter-extension* in the treatment of fractured thigh, nor (we must add) do we think that such a claim could be successfully maintained on behalf of Dr. Swinburne himself; on the other hand, while the use of the weight and pulley is, as our readers know,¹ at least as old as Guy de Chauliac, in the fourteenth century, the credit of reviving and popularizing the method—to such an extent that English writers describe it as the "American method"—is undoubtedly due to Dr. Buck more than to any other surgeon.

Dr. Johnston's essay has at least the merit of brevity; of his twenty-four patients he lost seven, and having little or nothing to say, he judiciously occupies but five pages in saying it.

In addition to the plates, ten in number, which appear at the end of the book, it is adorned with a frontispiece and sixty-one wood-cuts. Of those which illustrate the happy results of Dr. Swinburne's treatment, several represent patients entirely naked except for neatly fitting suspensory bandages which conceal those parts which, in civilized communities, are not ordinarily exhibited

¹ See Dr. Edward Hartshorne's papers in numbers of this Journal for April, 1869, p. 338, and July, 1869, p. 278.

to the public gaze; if the volume be meant for professional readers only, this is, we think, unnecessary—if it be designed as an ornament for the centre-table, we confess that, as a matter of taste, we should prefer the traditional fig leaf.

J. A., JR.

ART. XXVIII.—*Lessons on Laryngoscopy; including Rhinoscopy and the Diagnosis and Treatment of Diseases of the Throat.* By PROSSER JAMES, M.D., M.R.C.P., Lecturer on Mat. Med. and Therapeutics at the London Hospital, Physician to the Hospital for Diseases of the Throat, etc. 12mo. pp. 176. London: Baillière, Tindall & Cox, 1873.

THIS book has the merit of being concise and practical. The "lessons," as the author styles them, are well adapted to guide the novice in laryngoscopy. Rather an undue amount of space, however, is devoted to the historical details of the invention of the laryngoscope, and then that hackneyed account of the priority-strife is once more recited. In fact Mr. Prosser James advances some rather ambitious claims of his own as to originality in the use of reflected light in making topical laryngeal applications. It must be conceded, however, that he, if not the Nestor of laryngoscopy, has at least been one of the most indefatigable workers in this department ever since its first inception; and we must confess to no little disappointment, that, instead of giving his own views, matured by years of practical experience in the treatment of diseases of the throat, upon laryngeal pathology and the relative value of various therapeutical agents, he rather has seen fit to limit the scope of his book to the mere technics of laryngoscopy. We had imagined that medical literature was already amply studded with elementary treatises upon this topic, but no doubt the impartial and concise manner with which the author handles it, will secure him many readers, whatever other merits or demerits the book may possess. The student will recognize the value of the five excellent chromo-lithographic plates which embellish the text; he cannot fail to be instructed by the perusal of the reprint of Garcia's hitherto inaccessible "Observations on the Human Voice;" he will also no doubt be impressed with the absence of anything like order—Heaven's first law—in the arrangement of the fourteen chapters which comprise the book, more especially so, since there is neither an index or even as much as a table of contents appended. The omission of anything worthy of the designation of pathology may perhaps be considered as pardonable in a book of this kind, but that of an index certainly is not.

R. M. B.

ART. XXIX.—*Ligation of Arteries.* By Dr. L. H. FARABEUF, Aide d'Anatomie à la Faculté, etc. Translated by JOHN D. JACKSON, M.D., of Danville, Kentucky. With engravings. 12mo. pp. 157. Philadelphia: J. B. Lippincott & Co., 1874.

THE author announces in his preface that this little book is to form the first part of an operative manual in which he "will treat solely of the current urgent operations (amputations, ligations, etc.) which every practitioner is called upon to perform, and which, contrary to what is the case regarding special operations, are not much dwelt upon in the books on general surgery."

We might question the justice of this charge, as regards amputations at least, for these operations are, we think, certainly described with sufficient minuteness in most modern surgical text-books. With regard to ligations, on the other hand, how often, we may ask, is "every practitioner" actually called upon to take up the peroneal artery, or the subclavian, not to speak of those which the author calls exceptional operations, such as deligation of the innominate, or of the common iliac?

The truth is that the value of such manuals as Dr. Farabeuf's is not in teaching the student methods of treatment which he will with any probability have occasion to resort to in practice, but in furnishing him with a guide for such operations as he can conveniently perform in the dissecting-room, and the habit of performing which will impart to him a facility in manipulation which can afterwards be utilized in any surgical procedure he may be called upon to undertake.

Regarded in such a light, Dr. Farabeuf's book seems to us a very good one; the directions for performing the various operations are clear and sufficient, and the illustrations, upon the whole, better than those which are found in the chapters on ligations in most of our text-books. When, however, a surgeon, called upon to tie an artery in its continuity, finds it necessary to refresh his memory as to the anatomical relations of the vessel with which he is going to deal, he will, we think, do better to resort at once to the dissecting table, or, if this cannot be done, to a large work such as that of Maclise, rather than to any pocket-manual, excellent though this may be of its kind.

Dr. Jackson has done his work as translator in a satisfactory manner; if we were to offer any criticism upon this point, it would be that his version is unnecessarily literal.

The book is neatly, and, indeed, elegantly printed, and the illustrations, as we have already mentioned, more than ordinarily good; though the latter are numbered from one to forty-three, there are really but thirty-five, eight being made to do double duty in different parts of the volume. J. A., JR.

ART. XXX.—*Skin Diseases; an Inquiry into their Parasitic Origin, and Connection with Eye Affections; also the Fungoid or Germ Theory of Cholera.* By Jabez Hogg, Surgeon to the Royal Westminster Ophthalmic Hospital, etc. etc. 12mo. pp. 108. London: Ballière, Tindall & Cox, 1873.

THIS is truly a most extraordinary little work! When we consider that it was written in the year eighteen hundred and seventy-three, by one living in the heart of great London, surrounded by all the literature which the world offers, we cannot otherwise than wonder how it was possible for the author to stray so far away from truth and recognized fact. To say that he has seen with his microscope what no else has ever seen, or probably ever will see, gives but a faint idea of the many startling statements which meet the eye upon almost every page.

In turning over the first pages of the monograph we come upon a passage which causes us to pause and ask ourselves whether we know anything of the nature of cutaneous diseases; or has our author progressed with such rapid strides into pathology as to have left us, and the literature of yesterday, far, far back among the things that were! After a brief introduction, our author says: "The cases investigated were chiefly derived from fourteen genera of Willan's classification;

namely, *Porrigo*, *Psoriasis*, *Pityriasis*, *Sycosis*, *Lepra*, *Lupus*, *Lichen*, *Impetigo*, *Furunculus*, *Eczema*, *Vitiligo*, *Spilus*, *Ichthyosis*, and *Acne*. The spores or filaments of a cryptogamic plant were found in most of the genera." Now, without further remark, it is very evident that either the author possesses most remarkable powers of vision, and has made some valuable discoveries in pathology, or that he has fallen into a series of most egregious errors. Let us examine a few of his statements. After a vague and indefinite account of *psoriasis*, for the most part erroneous, we read: "In all, twenty cases of the various forms of *psoriasis* and *lepra* were examined; and in twelve of them spores and threads were found, mixed with epithelium and granular matters; but in no respect did the fungoid elements differ from those discovered and described as belonging to other dermatophytæ." A few lines further on we notice, "that *psoriasis* is not of local or parasitic origin, is proved by the failure of topical applications in its treatment." It must be admitted, we think, that the views entertained are by no means clear concerning the pathology of this disease! *Eczema* also receives microscopic study from our author, who states that "the hair is matted together by the discharge, and in four out of six cases examined, I observed the spores or mycelia of a fungus. In one, the spores were in masses or minute heaps; and in another, an epithelial cast, from which the hair had escaped, was surrounded by a filamentous growth that had probably encircled the hair." In *ichthyosis* there were "fungus threads binding the scales more intimately together, weaving them, as it were, into a consolidated mass." *Lichen simplex*, or *eczema papulosum* as we should prefer to call it, was found to contain its due proportion of "spores," they being "of a reddish-brown colour, invading the shafts of the hairs, similar indeed to the fungus found in *mentagra*." The pathology of *lupus*, which we did think was becoming quite comfortably settled, has likewise received a blow from our author, he having found in two out of eight cases investigated, "evidences of fungoid spores, mixed with epithelial scales, fat and pus-corpuscles, and dark-looking granular bodies." But we shall quote no more. The experiments are valueless, for no detail is given as to the manner in which the examinations were conducted. The "spores and threads" of *psoriasis*; the "spores and mycelia of a fungus" found in *eczema*; the "fungus threads" of *ichthyosis*; the "reddish-brown spores" of *eczema papulosum*; the "evidences of fungoid spores" discovered in *lupus*, etc. etc., afford but a very imperfect picture to the mind of the mycologist. Science demands more accuracy in its nomenclature, and a reference to the mycologies of Corda, Bonorden, Fresenius, Du Barry, and others, would have shown our author that it is customary, in the scientific world, to describe fungi in more definite terms. An extremely rough wood-cut ornaments one page, where these various hitherto undescribed vegetable growths are professed to be shown.

The book is written in a thoroughly unscientific manner, and in the hands of the general reader, for whom it was evidently written, it can only mislead, and be the means of disseminating theories which have not so much as their shadow to support them.

L. A. D.

ART. XXXI.—*Kin-Se I-Setzu.*

Modern Medical News. Edited by STUART ELDRIDGE, M.D. (U. S.). In charge of the Government Medical School, Hakodate. Nos. 1 and 2, for March and May, 1874. Yeddo, Japan.

WE are indebted to its able editor for the first two numbers of this periodical, which he informs us is the first medical journal ever published in Japan. It is a bi-monthly, is printed at the expense of the Imperial Government, and has already a circulation of one thousand copies. It is primarily intended, we are further informed, for a large class of native physicians, who have already become somewhat acquainted with western medical science, either by means of oral instruction or through the few existing translations of medical books, but who have no knowledge of any language but their own.

The following list of the articles contained in the second number, published in May last, will serve to afford our readers some idea of the character of the journal.

Art. 1. Lecture on Urethral Stricture, by the Editor; 2. Surgery without Hemorrhage (Esmarch's method); 3. Apparatus for Digital Dislocations; 4. Government Inspection of Coal Oil; 5. On the Relief of Pain; 6. Necessity for Education of Midwives in Japan; 7. Use of Salts of Copper in Cholera; 8. The Nitrite of Amyl, a New Remedy in Asthma; 9. Rules for the Administration of Arsenic; 10. Oxide of Zinc in Diarrhœa of Children; 11. Tinctura Ferri Chloridi in Smallpox; 12. Gelatine Suppositories in Fecal Accumulation; 13. Treatment of Syphilitic Onychia; 14. Tinctura Ferri Chloridi in Post-partum Hemorrhage; 15. Ergotine in Hemorrhage; 16. Glycerine as a Vehicle for Medicines, with Table of Solubilities; 17. New Sign of Death; 18. Worms in Heart; 19. Bloodvessels of the Dog in China and Japan.

The efforts now being made by the enlightened Government of Japan to diffuse useful knowledge among the people, and to extend to them the benefits of education, are worthy of the highest commendation, and cannot fail to produce rich fruits in the near future.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Transfusion with the Blood of Different Animals.*—Some very interesting and valuable experiments have lately been made by Professor LANDOIS, of Greifswald, to determine the changes which take place in the blood of one animal when transfused into the circulation of another of a different species. He was led to investigate the subject in consequence of the use which has lately been made of animals' blood in transfusions into the human subject.

Dogs were injected with the blood of man, of the sheep, cat, guinea-pig, calf, pig, and pigeon; rabbits, with the blood of the hare, sheep, calf, and of man; while transfusion of human blood was performed on the sheep. The frog was especially studied as the subject of transfusion of the blood of all the animals already enumerated, as well as of the pike, and the *Rana esculenta* was injected with the blood of *Rana temporaria*. The veins which run on the surface of the frog's abdomen render transfusion with an ordinary hypodermic syringe very easy of execution. It was found that if from 0.5 to 0.8 cubic centimetres of fresh or defibrinated mammalian blood were injected into the veins of a large frog, changes rapidly occurred in it, the most marked being a dissolution of the red corpuscles, so that the frog's serum acquired a deep ruby-red lac-colour (*Lackfarbe*), from the hæmoglobin set free from the corpuscles. In transfusions with rabbit's blood, the dissolution was nearly completed in from three to five minutes, and in other animals generally in from twenty to thirty minutes. Dog's and pigeon's blood resisted the longest.

The determination of these periods was made by taking separate portions of blood at very short intervals from one of the frog's toes, the blood being put up for microscopic examination in Pacini's fluid (corrosive sublimate one part, pure chloride of sodium two parts, glycerine thirteen parts, distilled water 113 parts). Some idea of the amount of dissolved hæmoglobin was obtained by comparing the tint of the frog's serum with portions of the mammal's blood experimented on, diluted with known quantities of water. Part of the hæmoglobin of the dissolved corpuscles is found in the urine of the frog in company with albumen. Frog's blood (either fresh or defibrinated) was also mixed with the blood of the other animals and examined microscopically, or else their blood was examined in frog's serum. It was then found that the red corpuscles, often after first assuming an irregular outline, and exhibiting lively molecular movements, become perfectly globular, and so appear smaller than before; they then become paler and paler, till at last only the "stroma" remains visible, and this at last also disappears. The "stromata" often aggregate into masses, and thus can give rise to embolism and consecutive inflammatory phe-

¹ The term "stroma" is given by Rollett to the blanched, pale, globular residue of the red corpuscle, after removal of the colouring matter.

nomena in the circulation. Possibly the paralysis of the hinder extremities, and the weakened action of the central nervous system, which Landois has not unfrequently seen follow the injection of mammalian blood into the frog, may be due to such embolisms. If a frog be injected with serum which has been freed as much as possible from corpuscles, its urine is found for several days after to contain albumen and blood; so that in all cases of transfusion it is probable that some of the cells of the receiving animal are destroyed as well as those of the giver. But this mutual action varies much in different species, for moderate injections of serum from man and the sheep caused albumen alone to appear in the frog's urine.

The experiments in which transfusion was performed between two different species of the *mammalia* gave two chief results: (a) The serum of the blood—either fresh or defibrinated—of many mammals dissolves the blood-corpuscles of other mammals, and of the former the dog's serum is most powerful, and the rabbit's the least. (b) Mammalian blood-cells vary much in their resisting power to the action of the serum of other animals, and here, again, the rabbit suffers most, and the dog and cat resist the longest; the dissolution is accelerated by warmth. Rabbit's blood injected into a dog is destroyed in a few minutes. The dissolved constituents of the blood are disposed of in two ways: they are partly excreted, principally by the urine, but in smaller and uncertain quantities by the bowels, uterus, bronchi, and into the serous cavities. The other part probably goes towards the nutrition of the receiver.

As to the value of transfusion as a remedy, either for loss of blood or for constitutional anæmic conditions, Dr. Landois believes that it may benefit the receiver in three ways—(1) by bringing nutritive material into his body; (2) by the oxygen which is derived from the dissolved blood-cells and in its serum; (3) by possibly, in certain circumstances, improving the mechanical conditions of the circulation. He does not think that there is much probability of the foreign blood-cells ever taking on themselves the physiological functions of those of their receiver—at any rate where the two species stand a little way apart in the scale of nature—but he has no data on which to found a certain opinion with regard to very closely allied species.

Albumen and hæmoglobin are found in some cases in the urine as early as one hour and three-quarters to two hours and a half after transfusion, and their excretion lasts twelve hours or more. In consequence of the partial destruction of the cells of the receiver's blood by the foreign serum in some animals (*e. g.*, the rabbit), symptoms of great severity and danger may occur, after the operation, such as immensely quickened respiration, dyspnœa, convulsions, and even death or asphyxia may follow it.

Portions of test blood, taken at different intervals from animals in such conditions, show all stages of dissolution of the corpuscles, and the urine becomes bloody and albuminous if life is sufficiently prolonged. In animals whose corpuscles have great resisting power (*e. g.*, the dog), these phenomena do not appear, the foreign serum itself undergoing change before it has time to act.

Death may occur, after copious transfusions, from the rapid massing together of the foreign (or the animal's own) blood-cells, which leads to extensive coagulations of fibrin in the vessels; and many kinds of blood exhibit the phenomenon that when mixed with other blood their corpuscles aggregate into masses, which may give rise to capillary embolisms in the lungs. The danger of transfusion into the blood of different animals, therefore, depends on the relation of the species employed.

As a sort of appendix to Dr. Landois's experiments, we should like to record here some cases of actual transfusion of *lamb's* blood into the human subject, published by Dr. Hasse, of Nordhausen (*Tagesblatt der 46 Versammlung, Deutscher Naturforscher*; Wiesbaden: No. 7, 1873). Interesting in themselves, they derive additional interest from the light which Dr. Landois's researches throw on some of their phenomena, and they afford an indirect confirmation of his statements of a striking nature. The cases are twelve in number, and distributed as follows: Five were phthisis, two chlorosis, two cachexia after severe illness, one cachexia with caries of the vertebræ, one carcinoma ventriculi, and one placenta prævia with severe hemorrhage. This

last case recovered rapidly, the two cases of general cachexia recovered gradually, and the chlorotic patients only very slowly. The patient with carcinoma was temporarily benefited, and the one with spinal disease improved in general health and had less suppuration. The results in the phthical cases were wonderfully satisfactory (*enorm gnstige*).

The reaction following the operation was very violent. There was marked dyspnœa, which even amounted nearly to apnœa, and necessitated interruption of the operation after sixty to ninety seconds. Half an hour afterwards there was a violent rigor, and the temperature rose to 40.9° C. (105.6° Fahr.), and then deep sleep followed, and on waking there was a feeling of comfort experienced. The patients quickly gained several pounds in weight, and their muscular strength and mental energy rapidly improved. In a few cases there was a slight excretion of albumen and the colouring matter of the blood in the urine. Does not Dr. Landois give the key to the dyspnœa and to the condition of urine here described?—*Med. Times and Gaz.*, May 30, 1874, from *Centralblatt*, Nos. 56 and 57, Dec. 1873.

2. *Electrical Stimulation of the Cerebral Convolutions*.—Recent investigations appear to have established beyond dispute the main facts of the experiments of Hitzig and Ferrier on the effects of electrical stimulation of the cerebral convolutions. But there is much less certainty about the interpretation of those facts. Are the convolutions, as Ferrier maintains, the actual motor centres for the movements obtained with such precision and uniformity, or is it that those regions of gray matter are in connection with lower motor centres, which may be set in action by the excitation of the higher? Considerable support is afforded to the latter view by some experiments which Dr. BURDON SANDERSON recently related to the Royal Society. Their object was to ascertain how far the definite movements resulting from the stimulation of certain points on the convolutions, which Dr. Sanderson proposes to designate by the neutral name of "active spots"—how far these precise movements can be produced, as Dupuy has asserted and Ferrier denied, by excitation of the subjacent white substance. He found that after removing the cortex of a cat's brain in the position of the active spots for certain definite co-ordinate movements, the section of the white substance yielded results on stimulation precisely similar to those afforded by the surface of the convolution. The same active spots could be found by stimulation of which the same movements were produced, and these spots had the same topographical relation to one another as those on the surface. Moreover, if the upper and outer part of the corpus striatum was exposed and tested, the same result was obtained. On it could be found the same active spots, in similar relation, which yield on stimulation the same movements, equally definite and precise. He concludes from these observations that the superficial convolutions do not contain organs which are essential to these combinations of muscular movements, and that it is probable that the doctrine is true which has hitherto been accepted by physiologists, that the centres for such movements are to be found in the masses of gray matter which lie in the floor and outer wall of each lateral ventricle. Similar experiments had, indeed, been made just before by Braun, of Giessen, whose account corroborates entirely Dr. Burdon Sanderson's independent results.—*Lancet*, June 27, 1874.

3. *Injury to the Brain with Pulmonary Hemorrhage*.—H. NOTHNAGEL finds on injuring with a needle a certain spot on the surface of the brain of the rabbit that peculiar disturbances occur, above all, hemorrhage in the lungs and in the tissue of the same, often so pronounced that almost the whole lung is traversed by the hemorrhage. Brown-Séquard, as is known, has also observed this, not however from injury to the surface of the brain, but of its basilar portion. Secondly, in the same way, meningitis can be regularly produced, chiefly bilateral, very seldom on the injured side, sometimes only on the half opposite to the injured side. This meningitis, the author thinks, is not a mere accidental circumstance.—*Journ. Anat. and Phys.*, May, 1874, from *Centralblatt*, No. 14, 1874.

4. *On Apnœa and its Influence on Convulsions.*—Dr. W. FILEHNE gives an experimental critique of a work by Brown-Sequard, in which that author made a number of rather extraordinary statements. It is well known that artificial respiration in animals produces by and bye the condition known as apnœa, in which the animal ceases to make any independent respiratory movements, leaving its respiration, as it were, entirely to the apparatus. It has generally been considered that the cause of this apnœa is the superoxygenation of the blood. The muscular movements of respiration are supposed to depend on the irritation of the respiratory centres, by blood containing an excess of carbonic acid or a deficiency of oxygen; and when by artificial respiration an excess of oxygen is supplied, then the respiratory efforts cease, because this irritation is withdrawn. On the other hand, a deficiency of oxygen not only irritates the respiratory centres unduly (violent respiratory efforts of dyspnœa), but also renders the various other motor centres unusually sensitive (convulsions of extreme dyspnœa). It takes, however, a high degree of this deficiency of oxygen to raise the excitability of the respiratory and motor centres sufficiently to produce convulsions. But strychnia is known to increase the excitability of these centres to such an extent, that even with ordinary respiration the slightest sensible impression is sufficient to set up the most violent reaction. If, however, we reduce the normal excitability of these centres by the superoxygenation present in apnœa, then it should require a much larger dose of strychnia to produce the effects referred to. It is well known that artificial respiration which is pushed, so as to produce apnœa, interferes with the convulsions of strychnia poisoning, and this fact has been taken as confirmatory of the views just stated. Brown-Sequard, however, in the paper referred to, opposes these views. It is true that artificial respiration interferes with the development of the convulsions of strychnia; but it does so not from the superoxygenation of the blood, but from the irritation of the air passages by the air which is forced in by the bellows. The ends of the vagus, phrenic, and other nerves are irritated, and this irritation interferes with the action of the strychnia. Irritation of these nerves by other means similarly reduces the action of strychnia—the irritation of a current of carbonic acid applied to the mucous membrane of the air-passages or pharynx. These observations of Brown-Sequard appeared of great importance, because by this form of irritation he claimed to be able to avert the convulsions not only of strychnia, but of epilepsy, by this simple means of a current of carbonic acid. The present author, therefore, thought it worth while to repeat Brown-Sequard's experiments, and he denies his results almost *in toto*. He finds that the introduction of a current of CO_2 does produce a temporary stoppage of the respiration, but this is a reflex phenomenon, and has no relation to apnœa. A current of CO_2 , on the other hand, makes no difference in the convulsions of strychnified or epileptic animals. The author, therefore, recurs to the old view of the production of apnœa, and of the mode in which artificial respiration reduces the action of strychnia.—*Glasgow Med. Journ.*, July, 1874, from *Reichert and du Bois Reymond's Archiv*, Nos. 3 and 4, 1873.

5. *Cause of Death after Varnishing Animals.*—The cause of death after the skin of animals has been covered with varnish has been the subject of much discussion. It has been ascribed to asphyxia, reduction of temperature, retention of perspiration, etc. Dr. FEINBERG has repeated the experiments, and he considers that the symptoms are due to a general dilatation of the entire vessels of the body. He finds in all parts dilatation, over-filling, and often rupture of the bloodvessels. In the spinal cord there was congestion, extravasation of blood, and hyperplastic formation of the neuroglia around the extravasations. There were constantly extravasations in the mucous membrane of the stomach. There were often extravasations in the liver, etc. Such an universal relaxation of the bloodvessels throughout the body must be due to paralysis of the vaso-motor centres. This would produce immense reduction of the intravascular pressure, and sinking of the action of the heart with stasis in the capillaries. It is well known that the vaso-motor centres are subject to reflex action by irritation of sensory nerves; and it is here supposed that the intense irritation

of the cutaneous nerves by the varnishing may be sufficient to paralyze these centres. This would account for the phenomena. The nervous symptoms, such as hyperæsthesia, partial anæsthesia, reflex tetanic convulsions, partial paralysis, etc., are sufficiently accounted for by the congestion of the gray matter of the cord. Then the very marked reduction of temperature may be due to the increased radiation of heat in the hyperæmic cutaneous vessels. It is to be noted that the author's microscopic specimens were looked over, and his facts confirmed, by the distinguished histologist Frey.

6. *On the Alkalinity of Urine.*—V. FELTZ and E. RITER (*Journal de l'Anatomie*, February, 1874, p. 311) have conducted a series of observations on the human subject, and made experiments on dogs, upon this subject. They arrive at the following conclusions: 1. The urine is only very rarely ammoniacal except in affections of the genito-urinary apparatus. The occurrence of alkalescence in the great majority of cases is to be ascribed to defects in the vessels, or to the mixture of the urine with more or less altered albuminous substances. 2. Urine placed in contact with the ammoniacal ferment, whose activity has been tested by its action on a solution of pure urea, does not undergo the ammoniacal fermentation with such rapidity as might appear from its composition. 3. The urine of sound healthy animals exempt from vesical or renal affections, does not become ammoniacal by prolonged retention in the bladder, produced by different mechanical methods. 4. Catheters impregnated with the ferment are not sufficient to render the urine of healthy animals ammoniacal. 5. The urine becomes ammoniacal temporarily, when a catheter, impregnated with the ferment, is allowed to remain in the bladder. 6. The same effect is produced on introducing into the bladder a solution of the ferment, and retaining it by mechanical means for about twelve hours. 7. Uræmia cannot be ascribed either to the retention of urine, or to the carbonate of ammonia produced by the decomposition of urea; for the former of these two substances is innocuous, and the second does not produce convulsions, unless in concentrated doses, the production of which in the blood is difficult to admit. 8. The decomposition of urea into carbonate of ammonia only takes place under the influence of a ferment or chemical agents which we have not taken into account here. This decomposition does not appear to take place in the blood, for injections of urea and the ferment did not produce uræmia. 9. The chloride, sulphate, phosphate, tartrate, benzoate, and hippurate of ammonia, when injected in sufficiently concentrated solutions into the blood, produce, from a physiological point of view, effects similar to those of carbonate of ammonia. 10. These salts are rapidly eliminated by the urine and saliva; the tartrate and benzoate do not undergo their usual transformation. The urine never becomes ammoniacal; and the breath is free from ammonia. 11. These salts, though of such a strength in solution as not to dissolve the red blood-corpuscles, nevertheless modify the properties of the latter. This fact is demonstrated by examination with the microscope, and by analysis of the gases contained in the blood; the absorptive capacity of the red blood-corpuscles for oxygen is notably diminished; while, on the contrary, the resistance to the action of water and acetic acid is increased.—*London Med. Record*, June 10, 1874.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

7. *Experiments on the Elimination of Alcohol from the Body.*—Dr. ANSTIE gives (*The Practitioner*, July, 1874) the results of experiments made by himself and Dr. Dupré to decide, if possible, the question whether alcohol to any appreciable extent escapes *unchanged* from the body of an animal which has digested it. With that view he examined the different secretions, etc., which might be channels of the elimination of alcohol.

1. As regards the kidneys, the experiments prove that they do not, practically speaking, eliminate any alcohol at all.

2. As regards the skin, the experiments prove that no considerable quantity of alcohol escaped in that way. It is only in the profound narcosis of dead-drunkness that the skin gives off any quantity of alcohol that can be readily discovered by tests.

3. By the feces: The alcohol in the feces of a typhus patient whose daily allowance of brandy (in health he was almost a teetotaler) was six ounces, proved to be less than $\frac{1}{10}$ th of a grain in 24 hours, according to the experiments of Dr. Dupré.

4. The lungs: Dr. Dupré's experiments, made during twelve days, show that about $3\frac{1}{2}$ grains only of alcohol were eliminated during the period in the breath, of nineteen ounces swallowed.

Dr. Anstie considers that the subject of the elimination of unchanged alcohol may now be considered as closed, and that we can see our way to the discussion of other very important questions respecting the physiological rôle of alcohol. Dr. Parkes intimates that in the event of alcohol having *proved* to be destroyed in the body, it would be especially necessary, before coming to any decision as to its physiological value, to make out clearly the nature of its influence upon the elimination of carbon from the body. That task Dr. Anstie and Dupré are now engaged in.

"It is impossible," says Dr. A., "fully to appreciate the importance of the further inquiries which must be made respecting the action of alcohol unless we remember the actual state of physiological knowledge respecting the processes of alimentation. No physiologist of any standing at present doubts that hydrocarbons and hydrates of carbon by their consumption produce available force within the body, and, in fact, that the bulk of the work done in the organism is obtained from these substances. Alcohol, as Dr. Pavy remarks, stands in a peculiar position, being intermediate, as to composition, between these two classes of foods. Being, as it is, a most highly oxidizable substance, it would be strange indeed if its oxidation did not prove to be the mode by which alcohol disappears within the organism. And looking to the fact that Dr. Parkes and myself have from independent (and indeed opposite quarters) come to singularly close agreement as to the daily allowance of alcohol that can be taken without producing any narcotism or other visible disturbance in the organism, I think I may take it as conceded that quite 600 grains of absolute alcohol can be disposed of daily within the organism of an adult male without any perceptible injurious effect upon the bodily functions. Now, this quantity of alcohol is (theoretically) capable of generating an enormous amount of force; but it is equally certain that that force does not show itself under the form of heat. It is scarcely possible, therefore, but that the solution of the questions as to the action of alcohol in the body will also bring about the discovery of new physiological facts of great interest and importance:—

"1. If alcohol be a force-producing food, as seems by far the most likely, it is probably of great value in that capacity, on account of the rapidity with which its transformations take place. It is, however, abundantly certain that beyond a certain dosage (which is pretty clearly made out for the average, though of course there are individual exceptions in both directions) it becomes a narcotic poison of a very dangerous character in every respect, not the least disadvantage being that it cannot be eliminated to any considerable extent.

"2. If alcohol does not disappear by oxidation, it must undergo some as yet quite unknown transformation, after which it must escape unrecognized in the excretions. I have heard various attempts to suggest such modes of disappearance, but nothing, so far, which wears any air of probability.

"3. If alcohol, however, be indeed oxidized, and yet does not beget force which can be used in the organism, this would be the strangest possible discovery. Considering the very high theoretical force value of the 600 to 800 grains of absolute alcohol which millions of sober persons are taking every day, we may well be hopeless of any reasonable answer to the question—Why does not this large development of wholly useless force within the body produce some violent symptoms of disturbance?"

8. *Action of Chloral on the Blood.*—In a communication to the Paris Academy Drs. FELTZ and RITTER enumerate the following conclusions from experiments on this subject:—

1. A solution of chloral (titrated to a fifth) injected into a dog's veins, causes the death of the animal, if the dose exceed 0.25 gramme per kilogramme. The temperature falls some tenths of a degree, seldom one degree. The respiration, momentarily accelerated, is soon retarded, becomes tetaniform, and stops; and along with these phenomena may be observed a trembling of the respiratory muscles, great paleness of the mucous membrane, some convulsions of the ocular globe, and great dilatation of the pupil. The heart-beats increase in frequency, become irregular, and cease an instant after the respiration. Conscious sensibility disappears before reflex sensibility; the latter is followed by muscular atony. There is no lesion found in the blood or in the viscera; death appears to be due to the action of the chloral on the nervous centre which governs the respiration.

2. The effects produced are different when one injects into the animal only the dose of chloral necessary to anæsthesia, and maintains it in this state by successive injections of fresh quantities whenever the reflex sensibility appears to return. Death occurs after twenty-four hours or thirty hours at the most. The dose of chloral necessary to maintain anæsthesia continuously diminishes, and the interval of the injections is more and more extended; four or five hours before death all injection becomes useless. The number of inspirations and expirations diminishes slowly and progressively, and is at length reduced to five or six in the minute. The heart-beats are accelerated as the respiration diminishes; the pulse, small, weak, and thready, ceases to be perceived, while the noises of the heart still persist. The arterial tension, indicated by the hæmodynamometer, falls.

The temperature falls only one to six degrees (Cent.) during the first six hours; it rises again rapidly from this point. We have seen it reach seventeen degrees; nearly always death takes place between twenty-four and twenty-eight degrees.

The saliva flows abundantly during the first hours; it becomes exhausted from the time when the temperature and the tension are notably lowered. Urine and dung are excreted from time to time.

The urine contains hæmoglobin in solution, easily recognizable with the spectroscope. The search for colouring matters of the bile, by the most delicate methods, has always led to a negative result. In two cases we have found glucose, which reduced Barreswil's liquor, was rendered brown by potash, and fermented alcoholically with beer-yeast. The urine always remained acid. The red colour of the urine frequently coincides with ecchymotic spots in the digestive mucus. The lungs, the liver, and the kidneys, always hyperæmic, never presented infarctus.

The alterations of the blood are profound; the corpuscles, deformed, have lost their elasticity; the plasma presents a red colour, which increases more and more. The field of the microscope is rapidly covered with crystals of hæmoglobin. We may state that we have never observed the like after section of the pneumogastrics, though this operation brings on some phenomena similar to those which we have observed during chloralization. The alteration of the blood is further shown from analyses of gases of the blood made at different periods of the chloralization, and by the capacity of absorption of this liquid for oxygen with which it is agitated. Without insisting on these various points, we content ourselves with saying here that the arterial blood of a dog, shaken with oxygen, takes up 250 cubic centimetres per 1000 before chloralization, and only 175 before death.

3. The toxic action of chloral is sometimes manifested after the waking of the animal, when the chloralization has been prolonged for a dozen hours, and the temperature has fallen to 30° Cent. (86° Fahr.). The alterations of the blood and the urine are then the same as we have described.

The waking of the animal is more rapid, the less the temperature and pressure have been lowered. Reflex and conscious sensibility appear in the first place; it takes two or three hours for the ataxic movements to be regularized.

We have found, in studying the products of respiration, that the greater part of the chloral is exhaled without being transformed. The product of condensation, a little milky, had not the least odour of chloroform, but it reduced, in heat, an ammoniacal solution of nitrate of silver. This character is common to chloral and to chloroform; but a solution of this latter substance which should produce a reduction to the same degree as our liquid of condensation would have a manifest smell and taste of chloroform. The condensed product further renders green a mixture of bichromate of potassium and sulphuric acid; this character does not belong to chloroform but to chloral. We have been able to assure ourselves, also, of the presence of another organic substance, but the small quantity we have hitherto succeeded in isolating does not allow analysis.—*London Medical Record*, Aug. 26, from *Comptes Rendus*, Aug. 3, 1874.

9. *Physiological Action of Chloral and Bromal Hydrates and Iodoform.*—Dr. McKENDRICK read a paper on this subject before the Medico-Chirurgical Society of Edinburgh (June 3, 1874). After referring to the researches of Rabuteau, Steinauer, and Dougall, he gave the results of his own experiments, which were made with the view of ascertaining the precise physiological action of bromal hydrate. He showed: 1. That the action was first on the cerebral hemispheres, afterwards on the ganglia at the base of the brain, and, finally, on the spinal cord; 2. That the extreme contraction of the pupil was the combined effect of paralysis of the sympathetic and irritation of the third cranial nerve; 3. That the action on the heart was caused, first, by irritation; and, secondly, by paralysis of the sympathetic; the substance also acted on the intrinsic ganglia of the heart; 4. That the action on the bloodvessels, causing dilatation, was the result of paralysis of the sympathetic; 5. That the action on the salivary glands, causing very profuse secretion, was the result partly of paralysis of the sympathetic, and chiefly by irritation of the vaso-inhibitory and secretory filaments in such nerves as the chorda tympani. He then compared the action of chloral with bromal, and finally described the result of a few experiments made with iodoform, which he employed in place of iodal, a compound he could not obtain, and the existence of which is doubted by many chemists. Into the question of the chemical changes ensuing in chloral and bromal hydrates while in the blood, Dr. McKendrick did not at present enter. He also showed that atropia arrests the excessive secretion of saliva, by paralyzing (as Heidenhain has shown) the chorda tympani. The President (Dr. R. Haldane), in thanking the author for his paper, remarked that its physiological interest was only equalled by its probable therapeutical value. A new era in the treatment of disease was dawning, as we were learning that the first stages of many diseases were really affections of the nervous system acting on the vessels, which conditions such experimental researches may enable us to treat.—*Brit. Med. Journ.*, June 27, 1874.

10. *Injection of Chloral into the Veins.*—M. VULPIAN, in a communication made to the Acad. of Med. (June 2d), states that he has very frequently resorted to intra-venous injection of chloral as a means of producing anæsthesia in animals so as to facilitate vivisections; and that very often in dogs hæmaturia resulted and there was found very great renal congestion manifested by redness and ecchymoses in the substance of the kidneys.

He suspects the same effect might be induced in the human species, thus giving rise to lesions of the kidneys which might become permanent and perhaps result in Bright's disease. This consideration, he thinks, might induce surgeons to employ chloral as recommended by M. Oré.—*Archives Générale*, July, 1874.

11. *The Diuretic Action of Digitalis.*—Dr. BRUNTON and Mr. HENRY POWER bring forward (*Centralblatt*, July 4, 1874) reasons founded on some recent experiments of theirs for rejecting the prevalent theory that digitalis increases the flow of urine by raising the blood-pressure in the arterial system. They injected digitalin in considerable doses into the veins of the dog, and drew off its

urine by means of a catheter. The injection was followed by great diminution or even total suppression of the flow of urine, while the blood-pressure rose simultaneously. After a time the latter again diminished, with, in some experiments, an immediate increase in the secretion of urine; whereas in others this did not occur until the blood-pressure had fallen below its normal state. In some experiments the rate at which the urine was secreted with a subnormal arterial tension was very considerable. Now, if digitalis owed its diuretic action simply to its power of increasing the blood-pressure, the secretion of urine ought to be considerably increased immediately after the injection, and to diminish *pari passu* with the blood-pressure. The experimental result is, however, exactly the opposite. The authors are therefore inclined to explain the diuretic action of digitalis by assuming that it stimulates the vaso-motor nervous system generally, while it exercises a special action on the vaso-motor nerves of the kidney. From this results a moderate contraction of the vessels of the whole body, with consequent increase of the blood-pressure; while in the kidney the contraction is excessive, and so puts an end to the flow of urine. As soon, however, as the stimulus to the vaso-motor nervous system is removed, the vessels of the kidney relax more quickly and more completely than the systemic vessels, so that the tension of the blood in the glomeruli of the kidney is still above the normal, although that in the general circulation is below it. This theory is further supported by the fact that albumen appears in the urine after the re-establishment of the secretion—just as Hermann has observed it to occur after mechanical obstruction of the circulation in the renal arteries. The authors consider that the action of digitalis may also be due in part to its direct effect on the secreting cells of the kidney, and they are at present investigating this point.—*Med. Times and Gaz.*, Aug. 1, 1874.

12. *Therapeutical Action of Quinia*.—M. SÉE has been delivering at the Charité a series of clinical lectures on the therapeutical action of quinia, some notes of which may be of interest. He is one of the most advanced scientific therapeutists, and believes that the action of drugs in disease may be predicted and explained by their physiological action in health. It is impossible to give more than a general idea of the views advanced and ably expounded by references to the natural history of the various diseases and the known action of quinia in their different forms, especially with regard to malarial fevers and acute rheumatism. His general conclusions are as follows:—

In health quinia has a threefold action: firstly, it diminishes the frequency and force of the action of the heart; secondly, it lowers the tension in the arterial system; and, thirdly, it lowers the temperature, or prevents its elevation by exercise, etc. Whilst recognizing its action on the amoeboid movements of the white blood-corpuscles, as shown by Cohnheim, Binz, and others, he does not regard this as of great importance.

In an able analysis of the various forms of malarial fever, and the teachings of experience as to the value of quinia in each, he concludes that the drug cannot be regarded as a specific or counter-poison—as (1) it does not prevent malarial poisoning when taken as a prophylactic; (2) it does not prevent recurrence after a variable period; and (3) it is useless in some of the most fatal forms, especially where the fever tends to assume a continued type. Moreover, he points out that in other fevers which present the characters of periodicity and the occurrence of initial rigor—*e. g.*, urethral fever from catheterism—quinia has an equally beneficial effect. He believes that the effect of quinia in ague is due to its threefold action, exerted chiefly during the period of rigor: by its action on the heart, it diminishes its frequency and force; on the peripheral arteries, it lowers their tension and produces dilatation; on the spinal cord and vaso-motor centres, acting as a sedative, it tends to diminish their excitability; and, lastly, it exerts a direct cooling action on the system generally; the latter, however, being the least important factor.

In acute rheumatism, M. Sée considers it by far the most valuable medicine; and states that he always returns to it with benefit after the trial of all other methods of treatment. Here, again, he sees in its physiological action the most precise indications for its use. Especially in its effect on the spinal cord

—in lowering its irritability, and thus diminishing the sensibility to pain; and lessening reflex excitability, and thus reducing irritation and the afflux of blood to the inflamed joints—does he consider that its value lies, its action on the vascular system and in lowering temperature being also beneficial. The dose which M. Sée recommends is from $\frac{1}{2}$ to $1\frac{1}{2}$ grammes (or 8 to 24 grains nearly) in the day; increasing it, however, to 2 or 3 grammes, or even more if needful. It may be mentioned that this mode of treatment is adopted by a large number of the leading physicians in Paris, either exclusively or with other means; and they all appear to be unanimous in its favour. It is only in the acute stages that M. Sée considers it beneficial, except for the relief of pain, and in this respect it is also useful in gout.—*Lancet*, August 8, 1874.

13. *Therapeutic Value of Ipecacuanha administered as an Injection.*—M. H. CHOUPPE states that in 1873 Dr. Bourdon first used the decoction of the root of ipecacuanha as an injection per anum in two infants attacked with severe diarrhœa; the results were most satisfactory. M. Chouppe was hence induced to try it in the diarrhœa of tuberculous patients, and met with equal success. The preparation and dose he has found best are as follows: Twenty grammes of bruised ipecacuanha root are boiled in 500 grammes of water divided into three parts, each portion being boiled on the root for ten minutes. The three decoctions are mixed together and boiled down to 240 grammes, to which are added about ten or twelve drops of laudanum. This is enough for two injections. For infants the dose is proportionately less, and no laudanum is added. Two injections are administered per diem to the patient, the first being given between 7 and 8 A. M., that is to say, two hours before food, the second about 8 P. M., that is to say about three hours after the last meal. Vomiting was never observed. M. Chouppe found that injection of decoction of ipecacuanha into the veins of an animal produced violent vomiting and remarkable dryness of the mucous membrane of the intestine. The chief substances taken up by water boiled on the root are emetine and tannin; and both appear to have a powerful influence in checking irritation. The conclusions he arrives at from the review of a number of cases of diarrhœa thus treated are: 1. That ipecacuanha, administered in the form of injection, produces very satisfactory results in the diarrhœa of tuberculous patients and in the choleric diarrhœa of young children. 2. By this proceeding the disorders of the stomach frequently caused by ipecacuanha are avoided. 3. Injections per anum can be continued for a long time without producing any trouble of the digestive function, nor weakening of the patient. 4. Ipecacuanha under these circumstances seems to act by absorption.—*Practitioner*, July, 1874, from *Bull. Gén. de Thérap.*, June, 1874, also in *Le Progres Médical*, June, 1874.

14. *On the Action of Bromide of Potassium.*—In a note on an article by Professor BIRZ, of Bonn, on the therapeutic use of bromide of potassium, in which the potassium is regarded as the true depressor of the muscular and nervous systems, and the bromine as inert, Professor TOMMASI makes the following remarks (*Il Morgagni*, January 1, 1874, and *Giornale della reale Accademia di Medicina di Torino*, June 10): "After many experiments in the use of the bromide of potassium, I believe I may express its action as follows: It has a positive action (1) in acute delirium, febrile or non-febrile; (2) in the eclamptic, epileptic, and epileptoid states; (3) in headache, but in a much less degree.

"On the other hand, I have found it completely useless in cases of insanity (*alienazioni mentali*); in the peripheric forms of nervous disease; in spinal irritation; in angina pectoris; and in asthma.

"It certainly has some hypnotic action, but does not approach chloral. In acute delirium I have given as much as eight grammes (two drachms) daily, and in epilepsy twelve grammes (three drachms), always with advantage, in the sense of diminishing the violence of the paroxysms. I know one case of epilepsy which may perhaps be said to be cured. On the other hand, I have given the bromide in large doses in cases of alternating convulsions without observing any effect to be produced.

"I have often used it in spermatorrhœa and priapism and in the irritative stage of spinal disease.

"I place but little credit in Binz's opinion, that all the effects are to be attributed to the potassium; I believe that in the cases referred to the medicine did good as bromide."—*London Med. Record*, July 15, 1874.

15. *Physiological and Therapeutical Researches on the Monobromide of Camphor*.—The *Practitioner* for August last, and also *Le Progrès Médical* for June 20th, contain a very interesting report by Dr. BOURNEVILLE, of Paris, of his experimental researches respecting the properties of monobromide of camphor. From his experiments, amounting to about forty, he considers himself entitled to attribute to mono-bromide of camphor powerful sedative properties, and to draw the following deductions:—

1. *Monobromide of camphor* diminishes the number of *beatings of the heart*, and determines contraction of the bloodvessels of the ears and eyelids. 2. *It diminishes the number of inspirations*. 3. *It lowers temperature in a regular and constant manner*. In fatal cases the lowering increases to the end. In those which recover, the lowering is followed by an elevation of temperature, which returns to its initial figure, but in a longer time than that during which the lowering was effected. 4. *Monobromide of camphor possesses undeniable hypnotic properties*. *It seems to act principally on the cerebral nervous system*. 5. *It does not seem that the medicament is got accustomed to; and its protracted use determines rather rapid loss of flesh in cats and guinea-pigs*.

16. *Apomorphia as an Expectorant*.—Dr. JURASZ, assistant at the Medical Dispensary at Heidelberg, has found apomorphia in the shape of the hydrochlorate, and administered in doses of one to three milligrammes every two hours, a valuable expectorant in cases of tracheitis and in bronchitis in its various forms. By its use the expectoration is rendered easier and more abundant, to the great relief of the patients, while the physical signs show a corresponding change from dry whistling rhonchus to plentiful moist râles, which gradually disappear. Dr. Jurasz adds a few drops of hydrochloric acid to the mixture in which the apomorphia is dissolved, to prevent the formation of the greenish tint which otherwise occurs, and which deepens the longer the solution is kept. The only ill effect which patients have complained of from the drug is slight nausea after the first dose, but this has disappeared after a second dose.—*Med. Times and Gaz.*, Aug. 1, 1874.

17. *Subcutaneous Injection of Hydrochlorate of Morphia*.—M. CHOUPE, who has performed many subcutaneous injections with the hydrochlorate of morphia, asserts that they act more promptly the nearer they are made to the seat of pain. Further, he says they are less painful than an injection of distilled water, and produce neither œdema nor any other local irritation.—*Tribune Médicale*, July 12, 1874.

18. *Valerianate of Amyl*.—Dr. W. F. WADE, of Birmingham, states (*Brit. Med. Journ.*, June 6, 1874) that "a spirit of the valerianate of amyl, to which a few drops of acetate of amyl (known in commerce as essence of Jargonelle pear) have been added, is, without any qualification or exception, not only the most elegant known preparation of valerianic acid, but intrinsically an agreeable drug. All these spirits improve in odour by a little keeping. I find that, to some stomachs, ethers are repugnant, unless well diluted; and six or eight drops of the compound spirit are, generally speaking, sufficient for an ounce of water, and also an adequate dose."

Dr. W. terms this "sp. amyl. valer. co." It consists of one part of ether to nineteen of spirit. To two ounces of this are added twenty minims of a spirit of acetate of amyl made in the proportion of one in twenty.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

19. *Aphasia*.—From an instructive paper on aphasia, in the *Revue des Deux Mondes*, M. CH. RICHER, we take the following remarks.

It is probable that, between the organ of thought and the vocal organ, there is a third, the organ of speech (*parole*); it is the lesion of this which constitutes aphasia. Certain authors, however, have held that aphasia does not exist; that the case is sometimes that of a loss of memory, sometimes that of destruction of the intellect. It is fitting that we should examine these two objections (though the problems relate rather to psychology than to physiology).

In the memorable discussion which took place in the Academy of Medicine, M. Piorry affirmed that aphasia was merely *verbal amnesia*; and so it was useless to make the faculty of language something special. It appears, however, that memory itself is not a faculty which can be distinctly defined. One cannot conceive a thinking being who has no memory; it is the basis of all our actions, and above all, of our ideas; whenever the mind thinks it makes use of anterior thoughts, and cannot separate itself from them. We identify ourselves, so to speak, with the notions we have acquired, and to separate the memory from the intellect can only be an analytic process, excellent for study, but impossible to accomplish in reality. It might be said, then, that there are different memories, applying to all the objects that we know, but that there is not a single memory. We see, indeed, that nothing is more capricious than memory. It is a common fact that each individual, according to his aptitude, retains certain things much more easily than others. One can recall verse, who is unable to retain prose; another will have the memory of figures, another, that of places; and yet we should not make, for figures, places, verse, or prose, a special faculty. It is quite otherwise with language, and if language be a memory, it is a memory so special, and has reached such a development in the life of individuals and the history of humanity, that it does not seem legitimate to confound it with other memories. For the rest, we find, from a study of aphasia, that it is produced specially; the aphasic play at chess and at cards, are interested in their affairs, understand them, discuss them, after their own manner, by multiplied forms of gesture, and a mimic language which they vary extensively. It is of little consequence if you call aphasia verbal amnesia; it would be sufficient to recognize that the verbal memory is a particular faculty, capable of being injured while the other faculties remain intact. But we will not even make this concession to the opinion of M. Piorry. Do we not see that the aphasic person who incessantly repeats *cousisi*, and cannot say either *cou* or *sisi* separately, has lost something else than memory? The aphasic woman who said "*Bonjour monsieur*," every second, could never say "*Monsieur bonjour*"; yet she retained the memory of the two words.

It is not necessary, indeed, to believe that all the faculties of the intellect are continually submitted to the will. There is a certain amount of *automatism*, more or less similar to what the physiologists of our age have called *reflex action*. We may, from the theoretical point of view, consider the nervous system as constituted of a sensitive cell, into which enters a sensitive nerve, and which is connected with a motor cell, whence issues a motor nerve. When the sensitive nerve is excited, by pinching or the like, the excitation is transmitted to the motor cell which makes a muscle contract, by means of the motor nerve. In this case will, intelligence, consciousness have no part in the production of the motion; it is a fatal, an unreflecting action. . . . It is by reflex action that all those automatic and involuntary actions can be produced, that form three-fourths of human life. Thus when we take a walk we may think of anything else. Our intellect is not distracted by the movements we make, nor occupied with willing to walk. We are in this respect veritable automata: the step we take provokes a second step, and reflection does not act. M. Onimus has rightly compared language to the automatic functions of walking, of dancing, of playing on instruments. Certain observations of aphasia are very

interesting from this point of view. A patient to whom some one had said "How does that do?" replied, "It does very well." A few seconds afterwards he could not repeat this phrase. In such cases the patients speak quickly, as if they were afraid of forgetting.

From these examples we see that there are in language various elements; the memory of words, the arrangement of phrases, and that automatic part which permits of our speaking without effort. There is a fourth element which has considerable importance; I mean the intellect. It is impossible to regard aphasia as a total disturbance of the intellect; that is not destroyed when the faculty of language is abolished. A musician, having become aphasic, may write the notes of an air which he has heard sung. It is true, he may not be able to write a single syllable, yet he will write the music as if he were quite without disease. Can any maintain that the intellect of the man is destroyed?

Still, it must be admitted that the intellect, in the aphasic, is often gravely affected. Professor Rostan could no longer comprehend the *Entretiens littéraires* of Lamartine, and Lordat suffered all his life from the lesion of his intellectual region. From having been an orator and improvisator of the first order, he became, after his temporary aphasia, incapable of speaking in public. He read his lectures, and could no longer improvise. Nearly all the aphasic are weak-minded; they have ideas more or less infantile; the merest trifles make them laugh or cry. Material concerns, their meals, and their sleep, interest them before anything.—*London Med. Record*, Aug. 5, 1874.

20. *Pulsation of the Subclavian as a Sign of Superior Dilatation of the Aorta*.—Dr. A. FAUVRE writes (*Archives Générales*) that, contrary to what is observed under normal conditions, there may be noticed in certain cardiac affections peculiar pulsations in the carotid region, and at the base of the neck. That these pulsations originate in the passage of the blood-current through a large artery—the subclavian—may be shown in two ways: first, by placing the finger back of and below the tubercle of the scalenus anticus muscle, when this artery will not be found in its usual position; then by making compression over the seat of pulsation, when the pulse at the wrist is affected. If, on making this compression over the misplaced subclavian, the arterial walls be lightly impressed by the finger, a double vibratory tremor may be remarked. The first and most intense part of this is systolic, and is evidently produced by the rapid centrifugal passage of the blood-current. The second, of variable intensity, is caused by the return of the blood towards the heart; it is sometimes wanting.

Auscultation over the seat of pulsation demonstrates the existence of a double blowing murmur, evidently connected with the vibratory tremor above mentioned. The second part of this murmur is wanting when the second part of the tremor is absent.

In a number of necropsies of such cases, the existence of aneurism affecting the superior wall of the aorta has been ascertained. In these cases the subclavian is found displaced, and overlapping to a certain degree the omo-hyoid muscle. It is at first uncovered behind the clavicle, and then becomes more superficial. Finally, it is sinuous—that is, too long for its channel.

The double tremor and murmur appear to be independent of any abnormal condition of the aortic orifice. The fact appears to be that the walls of the dilatation, true or aneurismal, having lost their elasticity, allow themselves to become distended under the influence of the ventricular wave at the same time as the arterial system. But, owing to the impulsive force of the heart having been exhausted by the inertia of these walls, the arterial tension is lessened.

The diastolic reflux of a part of the contained blood results of necessity from this unequal subdivision of the blood-tension. It is the centripetal reflux which determines the diastolic murmur. The displacement of the subclavian is evidently due to elevation of the superior wall of the aorta. It is shown in the shortening of the course of the carotid and other vessels given off, causing them to become sinuous, and thus to give rise to the pulsations noted. If the aortic dilatation be equal over all parts whence the great vessels are given off,

the various phenomena alluded to will be observed equally on both sides of the neck. If, on the contrary, it be greater near the aortic origin, or on the other extreme of the arch, pulsation, etc., will only be observed on the affected side.

We have here, then, a valuable aid in the diagnosis and prognosis of superior aortic aneurism. For not only may the extent and position of the enlargement be ascertained approximately, but, if in the progress of the case the vibration and murmur should disappear, we may hope that the aneurismal pouch is being filled with clots.—*London Med. Record*, June 10, 1874.

21. *Aneurisms developed upon Branches of the Pulmonary Artery bordering upon Caverns.*—In the *Progrès Médical* there is an interesting paper on this subject. The branches of the pulmonary artery which ramify in the walls of caverns in phthisical subjects are most frequently obliterated. This is a point upon which all authors since the time of Laennec insist, and upon which the researches of Nat. Guillot have more particularly thrown light. In some cases, however, these vessels remain permeable, but undergo in a localized point a histological modification, as a consequence of which they become dilated, and there can then be found a small aneurism projecting into the cavern.

These cases are relatively rare, but many facts recently presented to the Anatomical Society lead us to think that by more rigorous search they would more frequently be discovered. In all the cases where it has been studied, the process appears to have been the same; it can be summed up thus: denudation of the vessel over a limited point, endarteritis in the embryonic transformation of the wall at this level; then simple dilatation or aneurism; lastly, most frequently rupture of this aneurism. The vessels injured by this alteration are not the capillaries; their calibre has varied from a half to three millimètres. They were generally parallel to the cavern; in M. Lepine's case the artery was perpendicular. The hæmoptysis following the rupture has generally been very abundant, and has almost always been followed by rapid death; in some cases, however, the hemorrhage has ceased and the patients have not immediately succumbed, and it has been possible to find at a later period the orifice obliterated by clots of blood of different ages. Occasionally there appears to have been at several times successive ruptures and obliterations. According to Powell these aneurisms are developed especially in cases of torpid (quiescent) phthisis, where they exist on one side only of old caverns; and, on the contrary, the hemorrhage from simple erosion of the vessel will be rather the result of the active process of rapid phthisis.

Again, in the two cases, this change in the vessel would not be in any wise possible unless it were by one single point in its surface adherent to the diseased pulmonary tissue, the chances of obliteration being, on the contrary, much greater if the entire vessel dip into the morbid product.

An examination of the observations shows indeed, that in the majority of cases the pulmonary tissue over the wall of the vessel opposite the aneurism is almost healthy; but as to the first point, if there are many facts in favour of the phthisis being evidently chronic, there are others absolutely contradictory.

The rupture of these aneurisms is not forced, and although they have seldom been detected except after profuse hæmoptysis, it has been possible to discover those which had not burst. But if we expect that in the cases of extensive pulmonary alterations, the field of distribution of the pulmonary artery is more or less contracted, and that, as a consequence, the vascular tension ought to be there increased, if we add to that the feebleness of the wall of the vessels, we cannot be surprised that this rupture should be the most ordinary result. According to Jaccoud, it will also be more frequent or more early, if there does not generally exist in these cases a dilatation of the right auriculo-ventricular orifice, the result of which ought to be to diminish the volume of the sanguineous shower.

As for the occasional causes of the rupture they are unknown; however, it has appeared in some cases that the hæmoptysis has been preceded by a violent

fit of coughing, but we ought always to ask ourselves if the fit of coughing was not itself the first symptom of the hemorrhage.

It is very evident, again, that these cases cannot be foreseen, and up to this time they have never been diagnosed before the rupture; but if we observe at an advanced period of phthisis a profuse hæmoptysis to come on suddenly, we should consider it due to the rupture of an aneurism, and we ought not on that account to neglect to treat the patient; it will, quite on the contrary, be more formally indicated, to seek to arrest at once the hemorrhage, since we know that in certain cases the aneurism has been able to be obliterated by a clot of blood.—*London Medical Record*, July, 29, 1874.

22. *Gerhardt's Percussion-Sign of Change of Pitch*.—Dr. A. WEIL directs attention to a percussion-sign first described by Gerhardt in 1859, and apparently seldom or never taken advantage of in the physical examination of the chest, namely, change of pitch of the tympanitic (*tympanitisch*) note yielded by a circumscribed spot of the thorax with change of posture of the patient (*Berliner Klinische Wochenschrift*, 1874, No. 7). The author is careful to distinguish this phenomenon of change of pitch from two others which may present themselves under different circumstances. The first of these is "Wimtrich's change of pitch," and is familiar as the alteration of pitch occasionally observed over pulmonary cavities, according as the mouth, or the mouth and nostrils, are open or shut. The second is "Biermer's change of pitch;" it is related to the phenomenon which is the subject of the present paper, and depends upon the alteration in the length of the longer diameter of a cavity (with fluid and gaseous contents), by alteration of the posture of the patient.

Gerhardt's phenomenon appears to differ from that last described only in respect of the circumscribed area over which it is elicited. In explaining its rationale, Weil says that a tympanitic note occurring at a limited spot of the thoracic wall cannot possibly change in pitch with the posture of the patient, unless there lie behind the percussed spot a sonorous cavity the longitudinal diameter of which is diminished or increased with alteration of the patient's position. And such a lengthening or shortening cannot possibly occur unless there be present in the cavity not only air but a mobile fluid, which, in obedience to the laws of gravity, ever occupies the lowest place. In other words, Gerhardt's phenomenon depends upon the same principles as Biermer's does in pyo-pneumothorax, and indeed, may be said to be present when the sign described is elicited over a limited pyo-pneumothorax.

Two interesting cases are recorded in illustration, both ending in a confirmatory *post-mortem* examination.

Weil maintains that this phenomenon is more than an interesting sign of the exact architecture of a well marked cavern; it is available for the recognition of a cavern when other "cavernous signs" fail. Not one of these so-called signs is exactly pathognomonic, and this objection will not apply to Gerhardt's phenomenon should it be discovered. It indicates with certainty the presence of a somewhat large pathological cavity filled with air and fluid. Unfortunately, in the majority of caverns, all the conditions for the development of the sign are not present; the cavern may be more of a spherical shape, or its walls may be very irregular, or the fluid may not possess the necessary mobility; or there may not be the proper quantitative relation between the elastic and the fluid contents. Finally, the sign may vary in its occurrence from day to day.—*London Med. Record*, July 22, 1874.

23. *Changes in Shape of the Red Blood Cells in Septicæmia and Fever*.—The peculiar tendency of the red blood cells to assume an angular, indented, or thorny shape, which Huter describes as a specific sign of septicæmia, and explains as being caused by the entrance of monads into the substance of the red cells, has been found by ARNOLD HILLER not only in typhoid fever, but in all diseases attended with fever. The latter author strenuously denies that this change in shape of the red cells is at all characteristic of the blood of any disease, and says that it is in every respect identical with the change which

occurs from exosmosis in the cells of normal blood, which has become concentrated by evaporation, or the addition of substances, such as sugar, salt, or gum. The proneness of the red blood cells to undergo this change in fevers, may be explained by the presence in these diseases of circumstances which facilitate its occurrence, namely, 1, diminution of the consistence of the cells themselves; 2, increase of concentration of the serum, more effete matter being thrown off by the rapid metamorphosis of the tissues; 3, and a high temperature which aids the concentration after the removal of the blood.—*Irish Hospital Gazette*, July 15, from *Centralblatt*, No. 21 *et seq.*

24. *Diphtheritic Paralysis*.—Sir. JOHN ROSE CORMACK, in a paper read before the British Medical Association, began by describing a minutely observed, very severe, but typical case of diphtheritic paralysis. The main object of the paper was to elucidate the natural history of the affection, which he looked upon as the true guide to the prognosis and treatment of each case—so far as a guide exists irrespective of the individual peculiarities of the patient, and the character of the disease in respect of the district, season, and race in which it occurs, and the constitution of the prevailing epidemic, should the disease be prevailing as an epidemic. The most skilful physician cannot cure pneumonia, typhoid fever, or diphtheria; but he can guide to recovery many cases of these diseases which would be lost by the routine administrator of remedies. Medicines are sometimes exceedingly useful in diphtheritic paralysis, as well as in the earlier stages of diphtheria; but in each case, and in each epidemic, we find that the efficacy of particular remedies varies with the variation in the therapeutic opportunities. The author regarded a generous easily assimilated diet in all stages and forms of diphtheria as generally the basis of the treatment; ferruginous medicines were nearly always useful, but, like all other medicinal agents, they had their times for being given and for being withheld. In diphtheritic paralysis, the persistent use of local stimulants and small blistering bands (according to a method described) constituted, perhaps, the most valuable treatment. Electricity had its opportunities, and was sometimes most useful. Change of air, the douche, and short courses of nuxvomica, were agencies which frequently gave a start to a lagging recovery. Still, we must never lose sight of the fact that the paralysis has a definite career to run; and that if the patient were only to eat and drink well and digest his aliment, he will, at the end of a longer or shorter time, be restored to health—provided always, of course, that no insuperable obstacle to recovery exist, such as implication of the muscles of respiration in paralysis. In discussing the pathology of the affection, the author referred to recent German and Italian physicians who had described necropsies in cases of diphtheritic paralysis, in which they found a structural change in the gray and white matter of the medulla, which some of them have termed *disseminated myelitis*. The author looked on these appearances in the cases referred to as secondary. Diphtheritic paralysis, though it has its own peculiarities and specialities, is similar in kind to the paralysis which we meet with as a sequel of typhoid fever, relapsing fever, scarlatina, and dysentery. In all, it is peripheric. Its invariable starting point is the *velum pendulum palati*; and that is a distinctive peculiarity between it and the paralysis following typhoid fever, relapsing fever, scarlatina, and dysentery.—*Brit. Med. Journ.*, Aug. 29, 1874.

25. *Diphtheria*.—Mr. T. PRANGLEY read a paper before the British Medical Association, founded on the observation of fifty-six cases of diphtheria which came under his care at Aylsham during an epidemic which prevailed in the summer and autumn of 1868. The cases had been of all degrees of severity. He regarded the amount of engorgements of and deposit on the tonsils as a valuable prognostic sign; and said that one of the worst signs was the extension of the disease to the nares. The propagation of diphtheritic membrane to the larynx was also an ominous symptom. Regarding the treatment, he said that in every case he applied tincture of iodine (48 grains to 3j) locally to every part of the throat covered with membrane, at least once in every twenty-four hours, and also ordered the inhalation of iodine-vapour with steam. The

general treatment was supporting and stimulating. Of his fifty-six cases, seven died, five of whom were moribund when he first saw them.

Sir JOHN CORMACK said it was not safe to found our treatment of diphtheria only upon what we ourselves may have seen and done. A practitioner may have seen in some particular locality, or in some particular epidemics, nothing but recoveries; and, if he have applied iodine locally, and given zinc or iron internally, he may be inclined to attribute the successful issue of his cases to the treatment which he pursued. Unless he be as conversant with the experience of others as with his own, he may long slumber under his delusion; but the time may come to him, as it has come to others, when, in spite of his cherished remedies, local and general, he will see a large proportion of the attacked perish from croup, or be saved only by tracheotomy performed in good time. The use of local applications to the throat of a diphtheritic patient is fraught with infinite danger to the applier. Many medical practitioners and medical students have received the diphtheritic poison in the spit of their patients, involuntarily ejected on the application being made. Promising young physicians and some elder men—celebrities in medicine—have died of diphtheria so contracted. If we do apply anything to the throat, we can only do it with safety to ourselves if we wear a mask. But all potent applications to the throat have ceased to be in favour with those who have seen most of diphtheria. They say that iodine, nitrate of silver, and the like, generally produce increased exudation; while in other cases, where the exudative tendency is moderate, they seem to do little or no harm. The only local application now used by the author is the glycerole of borax of the *British Pharmacopœia*. It promotes the separation of the pellicle, and does not irritate the mucous membrane. The appearance of albumen in the urine is not of itself of evil prognosis. In many cases in which the urine has been intensely albuminous we have complete recovery. Diphtheria is essentially characterized by intermittence in the gravity of the symptoms: a lull, often mistaken for the dawn of convalescence, is not at all unusual. After such a lull, as a prelude to an exacerbation of symptoms, we can usually, by the thermometer, detect a rise in temperature, and a concurrent appearance or reappearance of albumen in the urine. Touching the differential diagnosis of simple membranous sore throat from the specific disease diphtheria, the author thought that it could neither be determined by the presence nor by the absence of fever, nor by any other than one test—a test simple and sure. Apply a small blister to the arm or elsewhere: if the case be diphtheria, the said surface will become covered with a diphtheritic pellicle; if it be not diphtheria, no false membrane will appear. Mr. Prangley, in reply, said that as regards the pulse, temperature, and urine, he could not get any information from them which was valuable in prognosis. He had, in some instances, tried for a time treating the cases without any local application, but as they became worse, he subsequently resorted to this mode of treatment. He could not agree with Dr. Bradbury that two diseases may coexist in the body. He thought it better to consider the two forms as one and the same disease, and to impress upon the friends the importance of mild cases.—*Brit. Med. Journ.*, Aug. 29, 1874.

26. *Croton-Chloral in Certain Forms of Megrim.*—Dr. SIDNEY RINGER read a paper on this subject before the Section of Medicine of the British Medical Association. He included under the term megrim the affections commonly known as sick headache, bilious headache, nervous sick headache, and hemicrania. He described the phenomena of an attack: and, with regard to its pathology, said that, though the affection was seated in the nervous centres, the frequency and severity of the attacks depended on peripheral exciting causes. The treatment included that of the central nervous affection; the removal or prevention of exciting causes; and the treatment of the paroxysm. Having referred to bromide of potassium as being often useful in a twofold sense, Dr. Ringer said that, remembering how closely megrim is allied to neuralgia, and how useful hydrate of chloral is in facial neuralgia, he had been induced to try this remedy in megrim, and had found it useful in cases of the continuous form.

Dr. Ringer further said that croton-chloral may be given in doses of five, ten,

or fifteen grains. He had given ten grains every hour for a fortnight without any unfavourable symptoms. He recommended five grains every three hours in ordinary cases of megrim, and the same quantity every two hours in severe attacks. With regard to the use of *combination* of drugs in megrim, he said he had found cannabis Indica, in conjunction with other drugs, the most useful form. Dr. Ringer had not found phosphorus successful.—*Brit. Med. Journ.*, Aug. 29, 1874.

27. *Subcutaneous Injection of Chloral in Spasmodic Asthma*.—Surgeon Major BAILLIE extols (*Indian Med. Gaz.*, June 1, 1874) the efficacy of chloral administered subcutaneously for the relief of spasmodic asthma, and records the following case in which it was used by Sub-Assistant Surgeon Nocoor Chunder Banerjee:—

“A scantily-clothed woman was carried into the dispensary one cold morning and deposited on the floor, her painful efforts to breathe absorbing all her attention, and rendering her quite unable to give any account of herself; from her friends it was learnt that she had been suffering for some weeks past from more or less difficult breathing which had culminated in the present most severe attack some twenty hours previously. Solution of chloral containing three grains in twenty minims of water, was at once injected subcutaneously at the back of the neck with so much advantage that, ten minutes later, the spasm had entirely ceased, and easy natural respiration had taken its place; the woman expressed her sense of the relief afforded her, and half an hour afterwards, walked off to her house with her friends; she was seen again a few days later, having remained quite free from the affection, and as she has not been heard of since, it is probable that the attack has not recurred.

“Several other cases of less severity than this have been also treated with equal benefit.”

28. *Atropia in Phthisical Sweating*.—Dr. JAS. M. WILLIAMSON gives (*Lancet*, July 25th, 1874) the results of his experience in the use of atropia in sixteen cases at the Royal National Hospital for consumption, Ventnor.

“The sulphate of atropia,” he says, “is best presented in pill, with extract of gentian; watery solutions are not to be depended upon, for they soon spoil by keeping. The first dose should in no instance be larger than one-eightieth of a grain, and, guided by the results, the dose may if necessary be increased to one-sixtieth, or even one-fiftieth of a grain; but if this latter quantity be exceeded, well-marked symptoms of poisoning will almost certainly ensue.

“In each of the sixteen cases in which the remedy was tried, the first dose produced a distinct effect on the perspiration, either wholly arresting it or materially diminishing it. In only one-fourth of the cases, however, was this effect direct and permanent; that is to say, only four patients, after using the pills for a varying number of nights, were able to omit the remedy without the sweating returning. But in these four the effect was lasting, for when seen two months after the cessation, each patient reported that he was still free from the slightest dampness. Of the remaining twelve cases, four found the benefit direct but temporary; that is to say, they obtained complete relief on those nights on which they took the atropia, but the perspirations returned if the pill was missed. In seven cases, although the eightieth of a grain at first diminished the sweatings, the dose had to be increased to maintain the effect. At last, however, the increasing habituation to the drug which characterized the sweats did not hold good of the toxic symptoms, for these became so marked that the remedy had to be abandoned in all the seven cases, without its having succeeded in putting a stop to the sweats in a single instance. Only one case remains, and here there appears to have been an unusual sensibility to the action of the drug. The eightieth of a grain distinctly lessened the profuse sweating each time it was tried, but after three or four attempts it had to be discontinued on account of the severe symptoms of poisoning to which it gave rise.

“It will thus be seen that the remedy controlled the perspirations more or less in the whole of the sixteen cases; that the effect was direct and permanent

in four; direct but temporary in four; beneficial but transitory in seven; and that it was inadmissible in only one instance. These results will be all the more striking when it is added that in many of the cases the sweatings had extended over a period of several weeks, and had resisted all the ordinary methods of treatment.

"The toxic symptoms most frequently complained of were intense heat and dryness of the throat during the night, and indisposition for bodily or mental effort on the following morning. Vomiting sometimes occurred, but diarrhœa was not observed. In one case there was retention of urine for several hours. The pupil was sluggish in action, but distinct dilatation was not common except in those cases where one-fiftieth of a grain was administered. The patients often complained of dizziness and inability to read any print but that of large type.

"It is well known that all efforts to check the night-sweats of phthisis too frequently fail; and although it is not urged that the sulphate of atropia is less uncertain than other remedies, it is believed that it will not be found inferior to them in obstinate cases, in some of which it was of much service after all other remedies had failed. The drug would probably prove of extreme value in combating the perspirations in those diseases (such as acute rheumatism) in which the sweating extends over a comparatively short period, and is not so inveterate as that in phthisis."

29. *Hydrophobia treated by the Intravenous Injections of Chloral.*—M. BUCQUOT reported to the *Société Médicale des Hôpitaux* a case of rabies in a man following the bite of a rabid dog. Several injections of a solution of chloral in water were made into the right radial vein with temporary relief to the symptoms while under the influence of the chloral; but without warding off a fatal termination. On the autopsy no coagula were found in the veins. M. B. concludes that chloral acts like chloroform inhalations, during the sleep from which the rabid spasms are suspended, but that it is as fruitless for a cure as other remedies.—*Gazette Hebdom.*, 17th July, 1874, also *L'Union Médicale*, July 25, 1874.

30. *Treatment of Cholera by Subcutaneous Injection of Chloral Hydrate.*—The supplement to the *Gazette of India* of February 14th, 1874, contains a report on this subject from Dr. HIGGINSON, to Dr. HALL, the latter of whom claims the merit of having originated this method. In a letter to the Commissioner of Sitapur, dated October 18th, 1873, Dr. Hall states that, in the *Indian Annals of Medical Science* for March 1870, he advanced the theory that, in the collapse stage of cholera, there was intense irritation of certain sets of nerves; and that hence the use of sedatives was indicated. These, he recommended, should be given by hypodermic injection; it being of little use to give medicines by the mouth. Subsequently, having, in conjunction with Surgeon-major Collis, ascertained by experiment the powerfully sedative action of hydrate of chloral, he tried the remedy with success on a soldier in the collapse of cholera—recovery being established in about five hours. He gives the following direction for the use of the medicine.

"I attach great importance to the strength of the solution used (one part in 10 of water); if it is too strong, it probably will not be absorbed into the blood, and only cause ulceration or sloughing.

"The following is the plan of treatment that I recommend for the three stages of cholera. During the premonitory diarrhœa (which is almost always painless), 30 drops of dilute sulphuric acid in a large wineglassful of strong camphor-water every hour. If this does not stop it, and vomiting comes on, commence the hypodermic injection at once. If the patient is first seen in collapse, inject 10 grains dissolved in 100 drops of water in four or five different places, according to the size of the syringe. This will probably be enough; but, if reaction does not commence within an hour, inject again. There is generally a great craving for cold water, which may be given in any quantity. Never mind if the patient vomits; as reaction proceeds, he will retain it. But no opium or stimulants are to be given in collapse.

"After reaction, if secondary fever supervenes, quinia in varying doses, every one or two hours, may be given with milk, beef-tea, and mild stimulants."

Mr. Higginson, in his report to the Deputy Commissioner at Kheri, states that he has treated nineteen cases of cholera according to the method recommended by Dr. Hall, and that death had occurred in only two of these; one being a case in which the directions were not properly carried out, and the other an exceedingly severe and rapid case. The seventeen patients who recovered were in various degrees of collapse when first seen. Regarding the manner of administering the remedy, he says:—

"The injections were made in the arms and thighs, the canula of the syringe being plunged pretty deeply into the flesh. The greatest quantity of chloral used in any of my cases was sixteen grains, or eight injections. If the case was a bad one, four injections were made at once; then nothing was done for an hour, when the treatment was repeated if necessary. As a rule, sleep was induced within two hours. Nothing else was done except mulling (shampooing) the limbs, and giving occasionally some cold boiled water."

The result of the treatment is thus described by Mr. Higginson.

"Chloral hydrate, being a powerful sedative, soothes the irritated nerves, and so relaxes the contracted vessels; the blood is once more uniformly distributed, and consequently the pulse reappears at the wrist; the cramps and burning abdominal pains subside, sleep is induced, the respiration becomes regular, the discharges lessen, the face fills out, the voice becomes stronger, and the natural secretions are restored."

The success with which Mr. Higginson has met (the recoveries amounting to 89 per cent.) is certainly such as to encourage a further trial of the hypodermic injection of chloral hydrate in cholera. At the same time, much more extensive observation is required before any definite conclusion can be arrived at as to the value or inutility of the treatment. We shall watch with interest any additional observations on this important subject.—*British Med. Journ.*, Aug. 22, 1874.

31. *On Acute Rheumatism treated by Chloral Hydrate.*—The following interesting history of a very severe case of acute rheumatism occurring in a boy of H. M. S. *Cambridge*, is thus given by Staff-Surgeon A. IRWIN of the Royal Navy Hospital at Plymouth (*Navy Health Report*, 1874). The boy, aged 16, was admitted from H. M. S. *Cambridge* on November 26, 1872, suffering from acute rheumatism, engaging the wrists, elbows, knees, hands, and ankle-joints, with high temperature, but without cardiac complication. He was treated, as has been customary in this hospital, with a mixture containing bicarbonate, acetate, and nitrate of potass., in effervescence; and an alkaline lotion with opium, to the affected joints. He progressed favourably up to December 5, when he became exceedingly restless, and complained of much frontal pain, and his countenance wore an anxious expression. In the evening he was in a state of busy delirium, and symptoms of acute meningitis were conclusively present; at the same time all the articular symptoms disappeared. Enemata were administered, cold to the head, and blisters, without the smallest relief. He was supported carefully with milk, beef-tea, and a fair allowance of wine. His pupils were dilated and almost inactive. He was restless, and continually tossing his arms about. He continued about 48 hours in the above state, and on the morning of the 7th had been without sleep; his pulse was 152, and very weak; his temperature 102.6°. He was then ordered draughts containing twenty grains of chloral hydrate, with syrup of ginger; one to be taken immediately, the others at such intervals as might be required. Soon after taking the first draught the muscular twitchings, or tossing about, ceased, and he eventually fell into a quiet sleep. He passed the day and night tranquilly, taking his nourishment at intervals, and on the morning of the 8th was quiet, rational, and comparatively comfortable; but about 2 P. M. there was a return of the unfavourable symptoms (less in degree). He was given half a chloral draught, which quickly composed him, and from that time to the present there has not been any return of head symptoms. The rheumatic affection relapsed, both knees becoming painful to the touch, and swollen. He steadily improved

from his extreme prostration, and was convalescing, but suffered from organic cardiac disease, which must unfit him for further service.

"He had no recollection whatsoever of the *Cambridge*, the ship from which he was sent into hospital, nor of any circumstance immediately preceding his illness. The case is remarkable—first, for its rarity; secondly, from the fact of the disease being almost invariably fatal; and thirdly, for the good effect produced by the administration of the chloral hydrate."—*London Med. Record*, July 15, 1874.

32. *Effect of Warmth in preventing Death from Chloral*.—Dr. T. LAUDER BRUNTON calls attention (*Journ. Anat. and Phys.*, May, 1874) to the "diminution of temperature which chloral induces, and the extraordinary effects of warmth in hastening recovery from its action, and preventing death from an overdose. The fall of temperature has been noticed by Liebreich and most other writers, but the effect of warmth applied to the animal's body has not, I think, received sufficient attention, although Dr. Richardson has pointed out its usefulness in preventing death. The diminution of animal heat is partly due in all probability to greater loss from the surface caused by the vessels of the skin becoming much dilated under the influence of the drug, and allowing the blood to be cooled more readily by a low external temperature. It is partly due also to the diminished production of heat which cessation of muscular action always causes, whether it be induced by simply tying down an animal so as to prevent motion, or by the administration of curare or narcotics.

"Professor Stricker having noticed that the animals on which he experimented often required a second dose of chloral to maintain anæsthesia, when they were wrapped in cotton-wool so as to prevent loss of heat, and still more when they were laid in a warm place, I made the following experiments at his suggestion. They show clearly that an animal wrapped in cotton-wool may recover perfectly from a dose of chloral which is sufficient to kill it when exposed to the cooling action of the air (which in the laboratory was about 20° C.), and that recovery from the narcotic action is much quicker when the temperature is maintained in this way, and still more rapid when the animal is placed in a warm bath. If the temperature of the bath is too high the animal may die from excessive heat, as I have shown in a former paper."

"The bearing of these experiments on the treatment of persons suffering from an overdose of chloral is so obvious as hardly to require any observations from me. The patient should be put to bed, and the temperature of the body maintained by warm blankets and hot-water bottles to various parts of the body, and especially the cardiac region. Warmth over the heart is an excellent stimulant to the circulation, which, like the respiration, is enfeebled by chloral, the heart, according to Rajewsky, being more or less paralyzed by the drug. If respiration threatens to fail, it should be maintained artificially, so as to allow time for the chloral to be excreted and the normal functions to be restored."

33.—*Hydrophobia; supposed Two and a Half Years' Incubation*.—Dr. FÉREOL, at a meeting of the French Academy of Medicine, on the 21st of July, read a long account, afterwards published in full in *L'Union Médicale*, July 30th, of the case of M. Durieux, a *pharmacien*, æt. 48, who was admitted in the *Maison de Santé* with symptoms of commencing hydrophobia, which speedily became confirmed. Death occurred on the third day, and beyond some cerebral and spinal meningeal congestion nothing special was found at the autopsy, which was performed with the greatest care. The patient stated that he had been bitten in the hand two years and a half ago by a mad dog, and subsequent inquiries have confirmed this statement.

M. Féréol, convinced that his patient died of true hydrophobia, reviews at great length the various affections with which this may be confounded. Treating of "nervous hydrophobia," he refers to a remarkable case which fell under M. Demarquay's notice. A student at the *Hôtel-Dieu*, having been greatly

¹ "On the Effect of Temperature on the Mammalian Heart and on the Action of the Vagus." *St. Bartholomew's Hospital Reports*, vol. vii. 1871.

affected by the suffering which he had witnessed in a patient dying of hydrophobia, had the misfortune as he was leaving the hospital to be himself bitten by a dog. He returned in a state of desperate alarm, and had the wound thoroughly cauterized, declaring that within six weeks he should return to die in a state of horrible suffering which he had just witnessed; and, accordingly, at the period indicated he did return with all the symptoms of hydrophobia developed. As he was still alive at the end of the forty-eight hours, when the patient whom he had seen had expired, M. Demarquay joked him, declaring that, as he had passed that period, he had not the disease, and had nothing to fear. These words inspired the youth with hope, his symptoms abated, and he recovered. That the patient was suffering in some analogous manner is rendered highly probable by a statement made by Baron Larrey at the next meeting of the Academy. During the siege of Paris, he observed, this M. Durieux (who, besides being a *pharmacien*, had a medical diploma) became well known to him as an applicant for employment in the ambulances. From the first he remarked his zeal and ardour, as well as his excited state and language. He seemed to seek to brave all perils in order to distinguish himself; and his excessive anxiety to obtain the Cross, and his tumultuous joy on succeeding, made a great impression on M. Larrey. "I lost sight of him afterwards," he observes, "always remembering him, however, as one of the most restless, the most agitated, and the most excitable beings with whom I had ever come into contact. Did he not then present a moral predisposition to the manifestation of the neurosis, which ended in a fatal hydrophobia? For my part, I should be disposed to regard his case, not as an example of rabies with an incubation of two years and a half, but as one of cerebral hydrophobia, or symptomatic of acute delirium provoked or aggravated by the coincidence of the bite of a dog presumed to be mad."

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY. *

34. *On the Bloodless Method.*—Prof ESMARCH observes that since he first brought the subject before the third Surgical Congress, in Berlin, he has had the opportunity of trying his method in 200 additional cases, and that he now entertains a much higher opinion of its utility than he did then. Not wishing to weary his audience with mere statistical details, he yet feels desirous of pointing out the influence which he believes the method exerts in diminishing the mortality of large operations. Thus, of thirteen amputations of the thigh he has only lost one, and the same with respect to eleven amputations of the leg, while four of the upper arm all recovered—so that in twenty-eight of the greater amputations there occurred only two deaths. An amputation of the shoulder succeeded, but one of the hip-joint, which from the first was almost hopeless, failed; and of eight excisions of the large joints (three of the hip, three of the knee, and two of the elbow) only one terminated fatally. These are favourable results that cannot readily be surpassed. His clinical wards are contiguous to the medical wards, and both have long been overcrowded, and erysipelas, diphtheria, and pyæmia have been often met with. He is under the conviction that the more favourable results of the present year are due to the adoption of the bloodless method. This presents the following advantages:—

1. The small loss of blood which takes place. Every one is aware how convalescence is retarded and endangered when the loss of blood has been large. The production of acute anæmia here is the great danger. The coagulability of the blood augments in many cases with the impoverishment of the red globules, and with this increases the danger of thrombosis and pyæmia.

2. Sponges need not be brought in contact with the unbleeding surfaces. Although he has always been very careful not to use sponges that have not been thoroughly cleansed and disinfected, yet Dr. Esmarch has still suspected that they have still had something to do with transporting contagious material, and especially the poison of erysipelas.

3. The large arteries and veins are not subjected (as they are when the tourniquet or digital compression is employed) to violent local pressure. They are equally compressed on every side by the entire mass of the soft parts being inclosed in the ligature.

Disadvantages of the method Prof. Esmarch has not met with himself, and, especially, he has not seen paralysis as a consequence of the ligature; and he believes that when this has taken place in the hands of others, it has arisen from too powerful an application of the caoutchouc tubing. Indeed, he has had to prevent his own assistants committing this error. All kinds of caoutchouc are not suitable, and he prefers the brown, non-vulcanized, and tubes or rollers made of the red caoutchouc; and in general no great force is required to completely prevent the afflux of arterial blood. The first turn should especially not be too forcible, as each succeeding one considerably increases its effect. Any one may be easily convinced of this by passing a fine caoutchouc bandage several times around the same part of a finger. He has never met with gangrene of the flaps reported by some surgeons, and thinks this has been dependent upon other causes.

Additional advantages of the method are referred to. Thus, as a consequence of the local ischæmia and compression of the nerves, a local anæsthesia is induced, rendering operations but slightly painful. In the out-patient establishment, at Kiel, it is almost always resorted to for small amputations, incisions, removal of nails, etc. Generally the anæsthesia does not occur until some minutes after the application, but if Richardson's spray-douche be used it is quickly induced, as the freezing is infinitely more quickly brought about when the arteries no longer bring additional caloric with the blood.

The method allows of a thorough examination being made of diseased parts, especially in the bones and joints. On many occasions Prof. Esmarch has examined these as deliberately as in the dissecting-room before he decided whether he would perform excision or amputation. He has thus frequently been able to assure himself of the various alterations on the living body, and has submitted portions to the microscope before he would decide on operating. The same assistance is derived in the removal of small foreign bodies, such as needles, glass, splinters, etc., which have become embedded in the hands or feet; and every one knows how a constant stream of blood aggravates the difficulties in these cases, leading in some cases to the abandonment of the attempts. Now, if the situation of the body be but known, it is removed with the greatest ease, and the slight wound necessary for this usually heals by the first intention. Of the great facility with which the ends of wounded arteries may now be found, Leisrink and Stokes have published remarkable examples.

Another advantage greatly to be prized is the fact that many of the great operations can be performed without any skilled assistance whatever—a fact of importance not only in military surgery, and for surgeons when alone on board ship, but still more so for practitioners in the country and in small towns. Many are the thankful communications on this head which the Professor has received from his pupils scattered about in country parts. One of them, not having the apparatus with him, employed a linen binder and his elastic braces during the easy extraction of a splinter of glass which was embedded in the arm. It is very desirable that officers and soldiers going into battle should have elastic braces capable of being used in the arrest of hemorrhage on emergency. Professor Müller, of Würzburg, suggests that in a woman dying of hemorrhage the ligature might be applied to the four extremities so as to force the blood towards the trunk and head, thus warding off collapse and giving time for transfusion, or enabling us to dispense with this.

By means of the ligature, which may be applied at any part of the extremities, lay persons are in the position of being able to control accidental hemorrhage, no knowledge of the places of the arteries being required, as for the application of the tourniquet. As Professor Langenbeck has remarked, in most cases an elastic bandage will answer the purpose as well as the caoutchouc tube, while its pressure is gentler and more uniform; but still there are cases in which the tube cannot be thus superseded owing to its smaller size. Prof. Esmarch cannot agree with those who think that his method is not suitable in

operations upon the shoulder and hip-joint, having himself employed it in several of these with complete success. In operations upon the shoulder, blood may be prevented passing through the axillary artery by carrying the tube under the axilla, drawing it tight over the shoulder, and keeping it in a state of tension by a strong fist supported by the clavicle. Or both ends may be held together by a clamp, like that used for fixing the pedicle in ovariectomy. Bringing the tube across the chest and back to the opposite axilla, as was at first done, is objectionable, on account of the interference with respiration that is produced. In amputations at the upper part of the thigh the tube may be passed firmly once or twice around the limb just under the bend of the thigh, crossing the ends over the inguinal region and carrying them around the posterior surface of the pelvis and uniting them over the lower part of the abdomen. Or a binder may be firmly rolled up and applied as a pad over the external iliac above Poupart's ligament, and compressed by several turns of a strong caoutchouc bandage. In operations upon the hip-joint itself, however, such a bandage would be in the way, and we must then compress the aorta in the umbilical region. This can be done by means of a pad formed of a linen bandage eight metres long and six centimetres broad. This is wound around the middle of a wooden staff the thickness of a thumb, and a foot in length, which enables the pad to be retained in its right position. The pad is applied immediately under the umbilicus, and is compressed powerfully against the spinal column by five or six turns of a caoutchouc bandage six centimetres in breadth. By this means the flow of arterial blood through the aorta can be completely arrested, provided care has been taken beforehand to empty the intestinal canal by means of purgatives and enemata. In some cases it is preferable to employ a pediculated pad, which allows of its being pressed deeper into the abdomen. Prof. Esmarch has had a slit made in the steel pedicle of his pad (*pelote*), through which the turns of the caoutchouc binder can be easily passed. Several persons have recommended raising the limb for some minutes prior to the operation before applying the compressor, but this is by no means of the same utility as the methodical application of an elastic bandage. The only cases in which the raising the limb is of advantage are those in which the presence of foul secretions renders it inadvisable to force them by the bandage into the cellular tissue and lymphatic system. It is very desirable, in cases in which there are open wounds, ulcers, or fistulæ of the extremities, that these should not only be covered with varnished paper, etc., but that pure caoutchouc bandages only should be employed, because these are much easier cleaned than are those in which silk or cotton enter into the composition.—*Med. Times and Gaz.*, June 20th, from *Wien. Med. Woch.*, May 16th and 28th, 1874.

35. *On Simple Ligature as a Means of Preventing Loss of Blood.*—In *Lo Sperimentale* of June, 1874, Dr. COLLETTI makes a brief communication to the following effect.

He had occasion to perform amputation of the thigh on a man who had his leg crushed by a large block of marble. The patient had already lost much blood when he was brought to the hospital. Dr. Colletti applied three turns of a narrow bleeding bandage round the upper part of the thigh; this had the effect of arresting the hemorrhage, and amputation was performed almost without loss of blood. The large vessels were tied; on removing the bandage hemorrhage took place from one small artery only, and was arrested by torsion. Dr. Colletti relates the case to show that an elastic cord is not absolutely necessary.—*London Med. Record*, July 22, 1874.

36. *On the Production of Anæsthesia by Compression.*—At a sitting of the *Société de Chirurgie de Paris*, held June 21, M. LE FORT read a communication on some cases in which he had obtained surgical anæsthesia by the sole employment of compression by the method of Esmarch; he attributed this effect to the energetic compression of the sensory nerves by the constricting band placed round the root of the limb. He considered that there was here a most valuable agent in producing anæsthesia, should the feeble condition of the patient not permit the use of chloroform, or demand the least possible loss

of blood. In the discussion, M. DEMARQUAY said that he had already attempted to induce anæsthesia by ischæmia, by applying Esmarch's apparatus in patients afflicted with varices of the lower limbs, but that he had found on removing the bandage that the sensibility continued, though considerably duller. M. Demarquay had in his cases suppressed the constrictor band placed on the root of the limb, and it was to this that M. Le Fort attributed the complete results he obtained; in a word, M. Demarquay kept within the bounds of producing anæmia of the limb, while M. Le Fort directly suspended the nervous action by the energetic constriction to which he submitted the nerves, by concentrating this constriction upon a limited portion of their extent. M. VERNEUIL, from the experiences he had had of Esmarch's method, had determined, 1st, that complete ischæmia, produced by pressure for fifteen minutes, admits the persistence of sensibility; 2d, that after removing the apparatus it manifests itself some time after the operation, a consequence no doubt of the paralysis of the capillaries produced by the pressure, the free loss of blood necessitating the ligature of a lesser or larger number of arteries; there is therefore an exaggeration in saying that, owing to Esmarch's apparatus, operations can be performed without the loss of a single drop of blood. If the wadding dressing be applied after similar operations, the oozing of blood which occurs soaks it and renders it defective, so that the intention of the method of dressing by occlusion would be, according to M. Verneuil, analogous to that of Esmarch.—*London Med. Record*, July 29, 1874.

37. *On the Mechanism of Hernial Strangulation*.—Dr. HERMANN LOSSEN (*Centralblatt für Chirurgie*, No. 4, 1874) states, that "for the reduction of those cases of hernia in which, from inflammatory swelling, a protruding intestine has so much increased in volume that it cannot be pressed back through the same aperture by which it protruded, there exist two rival theories—Roser's valve theory, and Scarpa and Busch's theory of pinching of the intestinal canal. To decide whether either of these be correct, and if so, which is the more so, I repeated Busch's experiments with fresh pig's gut; but, instead of water, I used melted wax which, on cooling, became a solid mass. The hernial apertures were represented by holes bored through the lid of a cigar box, through which a finger might pass. The casts of the loops after removal of the artificial hernial rings were now embedded in wax of another colour, and vertical sections made through them. In the same fashion a number of loops inflated with air were artificially strangulated and then dried."

The following results are demonstrated by these preparations and experiments:—

1. At the moment when the wax, or air, or, in the living gut, the fecal matter, enters the afferent end, the efferent portion of the gut, at the level of the hernial aperture, is pressed together, and by the constantly increasing pressure is finally completely closed.

2. This being accomplished, no pressure, however great, coming from above, will re-open the distal end of the gut.

3. The pinching (*Abknickung*) of the intestine, which is principally referred to the opposed folds of mesentery, is not the cause, but the consequence, of this closure.

4. The afferent end is never closed, which appears to contradict the hydrostatic law that in a closed space lateral pressure acts equally in all directions, and perpendicularly to the surface. According to this law, the pressure in a strangulated loop must exist up to the level of the hernial ring; and above it, in the afferent piece of intestine, a diminution or increase of pressure must manifest itself equally in all directions.

This may be demonstrated with extreme facility by means of a manometer attached to the afferent end of the artificially incarcerated loop of intestine. It may be shown in this manner, beyond all doubt, that in the living intestine the whole column of excrement presses upon the contents of the bowel in the strangulated loop. Therefore the pressure on the sides of the loop will depend upon the height and length of this column, and upon the resistance the intestine offers to the pushing back of the fecal contents. The height of this column

may become considerable by reason of the long continuance of the strangulation. During this time the pressure constantly augments, but it possibly may be reduced by severe fecal vomiting. The impediments arising from friction are the most important. These, from the very outset, are in inverse proportion to the transverse section of the hernial aperture; they depend further upon the viscosity of the contents of the bowel, upon the number of "pinchings" of the intestine occasioned by the gradual swelling of the convolutions of the bowel above, and also upon the contractile force of the pylorus and of the ileo-cæcal valve. They increase with the increasing peristaltic motion and swelling of the intestinal coverings, in consequence of which the afferent end may ultimately assume the minimum transverse section.

The author's observations and experiments show how great the lateral pressure upon the loop may become. It is manifest that the maximum of lateral pressure immediately above the hernial aperture must be attained at the time when that pressure equals the sum of the resistance due to impediments in the whole upper tract of the bowel. From this moment must commence a backward motion of the contents of the bowel, the fluid particles flowing back in the axis of the canal, whilst along the walls the peristaltic influence will urge the matter forward. In the strangulated loop these movements are reversed, and maintain the equipoise. Under these circumstances the pressure does not further increase.

In the living subject the resistance is much greater than in the dead, in consequence of the peristaltic action, the viscid nature of the bowel contents, and the smaller size of the hernial aperture.

The manometer shows that every species of direct pressure upon the tumour increases the tension, and aggravates rather than improves the condition of affairs. Neither Roser's nor Busch's theory explains this. It is the lateral pressure at the orifice of the sac which alone prevents reposition.

A rational taxis then will renounce attempting any alteration at the afferent end. The efferent end is the one to be opened. This is to be effected, Dr. Lossen says, as I am in a position by the manometric experiment to prove, by pressing the loop of intestine towards the side of the afferent end. The efferent end is by this means opened, and the loop partially empties itself, then a slight pressure upon the hernial swelling is sufficient to effect reduction.

Seeing that no practical diagnostic means are known whereby it can be accurately ascertained at what side, the right or left, the upper or lower, the efferent end may lie, the author recommends that sideward movements of the hernial swelling be carried circularly round. If this end be not attainable, an external herniotomy may be made, and then similar manipulations again tried before incision of the ring.

From the preceding it is also clear that, in the internal treatment, laxatives must not be administered, and that large doses of opium are to be commended immediately after the occurrence of strangulation. The peristaltic action will be thereby lessened, and thus one provocative of lateral pressure eliminated.

[Dr. William MacCormac had the gratification of seeing Dr. Lossen's striking and conclusive experiments at the late Surgical Congress, in Berlin, and he has since repeated some of them himself. The attempt to draw down a strangulated hernia, which is sometimes successful in effecting reduction, probably is so by thus opening up the distal end of the strangulated loop. The experiments of Dr. Lossen are simple, and easy of execution by anybody who will procure a piece of intestine, cut a half-inch round hole in a cigar box, and provide himself with the means of inflating the gut with air or fluid. The subject is one of very great interest.]—*London Medical Record*, July 8, 1874.

38. *Treatment of Syphilis*.—Prof. von SIGMUND, of the Vienna General Hospital, addressed an interesting communication to the *Giornale Italiano delle Malattie Veneree* for February, having for its title "On the Suitable Time for Commencing the General Treatment of Syphilis, and on the Choice of the Method of Treatment." As the result of his prolonged experience and observation, he lays down the following rules: 1. The methodical general treatment of syphilis should, as a rule, be commenced when undoubted signs of the

general disease are manifested in organs situated at a distance from the point by which the contagion obtained access. 2. For this general treatment, mercurial preparations should be preferred to all other therapeutical means. 3. The treatment should be continued, uninterruptedly or periodically, according to circumstances, as long as the symptoms of the disease persist or reappear. 4. The phenomena of other concomitant diseases should be treated according to their indications, precisely as if syphilis did not exist. 5. A hygienic regimen accurately adapted to each case constitutes a fundamental rule of treatment, and the diet of the patient should, as a general rule, be decidedly tonic.

In some cases in which appropriate treatment of the primary local forms has been adopted, unimportant consecutive forms only succeed, or these may be entirely wanting. A moderate amount of infiltration of the lymphatic glands, a passing erythema of the skin and the mucous membrane of the palate and pharynx, and at the most a little tumefaction of the tonsils, with slight febrile action, and sometimes rheumatoid pains, then constitute the exhibition of the disease. By the sole use of non-specific remedies, with a properly adapted diet, the whole of these symptoms usually disappear, with the exception of the glandular tumefaction, which also, in the course of some months, becomes considerably diminished. These cases are especially observed in the female sex. Now, if during this period specific remedies are resorted to, of what value can such cases be as statistical data? The spontaneous cure of syphilis in the sense indicated can only be called into doubt by those who cannot or will not observe. The necessity for general treatment, even before the appearance of the general forms, exists, on the other hand, when we have to do with pregnant women or with local forms, which produce, without any other cause for them being discoverable, extensive indurations or rapid destruction of the skin and connective tissue. In pregnant women, who moreover often present similar infiltrations, and in whom we have always to take into account the disease and death of the foetus, general treatment should be commenced as soon as possible.

As to the choice of mercurial preparations for general treatment, this may be decided according to personal circumstances; but as a fundamental rule preference should be given to those employed externally, and that especially because of the greater certainty of the results obtained. Fumigations, although warmly recommended of late, present greater difficulties than do frictions and injections. Although Dr. von Sigmund has, from prolonged experience, become a determined defender of the treatment by frictions, he is willing to allow that there may be advantages in the employment of injections. They may be tried, and will oftentimes suffice, and when they fail recourse can still be had to frictions. For the most part, however, patients object to them, although the pain they cause is slight, and the abscesses they may give rise to are of little importance. During the last two years he has employed injections of calomel, as recommended by Professor Scarenzio, with sufficient frequency to enable him to pronounce favourably upon it as compared with the sublimate. By employing small doses of calomel the production of abscesses is prevented, and the continuous treatment which this permits secures a better result. Neither by this nor any other mode of treatment, however, can we give security against relapses. These, which are often only ulterior developments of known forms, and generally to be explained by individual peculiarities of the patients, must be treated just as the earlier forms. In the treatment of all cases of syphilis it cannot be sufficiently recommended that we should guard against "furiously assailing them with medicine" and the neglect of the surveillance of the patient's hygiene and diet. The promotion and maintenance of the physiological functions are of far more importance in the treatment of syphilis than the employment of any pharmaceutical substance. Of iodine as an anti-syphilitic remedy Dr. von Sigmund entertains a very low opinion, believing it only capable, like various other remedies, of removing or mitigating the complications of syphilis, and by isolating it rendering its treatment more easy, and also of relieving some of the symptoms of mercurialism.—*Med. Times and Gazette*, June 6, 1874.

39. *Excision of Cancer of the Breast by Scissor-Cutting under Ether Spray.*—An extremely interesting case of this is recorded (*Lancet*, Aug. 29, 1874) by Dr. B. W. RICHARDSON.

A lady, æt. fifty, consulted him in April last, with a hard scirrhus tumour of her left breast, loosely held in the gland. The propriety of removing it while yet easily movable was apparent; but then the question of the administration of an æsthetic came under consideration. The action of the heart of this lady was so intermittent and irregular, and the power of her heart was so reduced, that the slightest external impression influenced it in its motion. She belonged, in a word, to that population which is prone to die suddenly from chloroform and other narcotic vapours.

Under these circumstances Dr. R. proposed that the tumour should be removed by local æsthesia, and, accordingly, he operated on the 8th of May in the following manner:—

The patient having been placed in a semi-recumbent position on a narrow couch, I directed Mr. W. Perkins, who very efficiently conducted the local æsthesia, to direct gently over the tumour a large spray of common ether, so as to chill thoroughly but not to freeze the skin. I let him maintain this for a period of five minutes. Then I handed to him another tube and bottle for spraying over the already chilled part the light fluid called anæsthetic ether—a compound of ether of sp. gr. .720 with hydride of amyl. A few moments' application of this lighter ether was sufficient to render the whole of breast frozen like a hard snowball. For a minute longer, that the deeper structures might become equally chilled, the spray was continued. When the structures were thus prepared, instead of using a scalpel for cutting, as in the ordinary way, I made the required incisions through the skin with a pair of small, strong, sharp, slightly-curved scissors. Commencing the incision by an angular cut at the outer margin of the part to be excised, I carried the lower blade of the scissors deeply into the breast with the edge of the blade everted. In this way I cut the lower flap; then, commencing at the same angle, I cut in the same manner the upper flap. The rapidity and ease with which these incisions through the hardened tissues were made struck me most favourably. The incisions were deep enough to enable me to grasp the tumour firmly with the left hand. I now laid down the ordinary sharp-cutting scissors, and with a pair of strong, slightly-curved, tooth-edged scissors, I proceeded to cut on each side of the tumour until I could fairly lift it up; then, by a few strokes made with the same scissors underneath, I cleared it completely away. The operation lasted precisely three minutes, and was unattended, during the whole time, by the escape of blood. The diseased mass removed, I had the ether spray withdrawn, in order to see if any vessels would bleed during reaction from the freezing. There was a little oozing of blood, which quickly subsided, and one artery was tied, both ends of the ligature being cut off close to the vessel. The wound, carefully cleaned with a soft, damp sponge, was closed: the edges of it were secured with five sutures; a pledget of cotton-wool, charged with styptic colloid, was placed over the wound; and a lint-pad and firm bandage completed the dressing. The patient passed a good night after the operation. She was allowed to rise and go into the drawing-room on the following day; and as she exhibited no rise of temperature beyond 99° Fahr., and that only for a few hours, and suffered from not one untoward symptom, the dressing was left untouched until the 13th of May, when, on removing it, the wound was found healed throughout its entire extent. The sutures were removed a few days later, when the line of incision was found fairly closed, without a particle of discharge or interruption of healing at any point.

During the operation the patient did not utter a single expression of pain, and afterwards stated that "during the application of the ether spray the local feeling was that of gradually becoming cold, as in frosty weather, just as when the hands go numbed, but there was no actual pain. Felt pressure when the scissors went into the tumour, and experienced a kind of jar, but did not feel anything like an incision, and, in fact, was not aware when the incisions were made. Felt nothing of the next part of the operation, but when the tumour was held up and divided by three long cuts, experienced a feeling, not of pain,

but as if the parts were put on the stretch or dragged; did not feel the tying of the ligature, but when some small substance (a bit of loose fatty tissue) was cut off felt again as if the parts were being stretched. When the sutures were introduced felt the pressure whilst the flaps were being held together, but was unconscious of the prick of the needle."

In all respects this operation was, as an operation, completely successful, and one other success followed it Dr. R. did not expect. As the recovery from the excision progressed the irregular action of the heart became less marked, and ultimately disappeared altogether. In the month of July this lady called upon me, and was found to be restored to perfect health.

Soon after the recovery of the above-named patient another lady came under Dr. R.'s care, with a scirrhus tumour in her breast. In this case again the question of the administration of chloroform or of some other anæsthetic vapour pressed for careful consideration. The patient had been declared by one of her medical friends to be suffering from disease of the heart, and had been urged by him in the most forcible terms not to subject herself to general anæsthesia. Another medical friend, in less determinate but still serious expression of opinion, gave her similar advice. She herself had read of the danger she heard described, and her anxious dread alone was all but sufficient to preclude the administration of any narcotic vapour. On examination of the heart Dr. R. found exceeding feebleness of action, an irregular and often intermittent beat, and at the apex a soft systolic murmur. Under these circumstances Dr. R. advised the removal of the tumour under ether spray, which he did on the 23d of June. The steps of the operation were the same as in the preceding case.

"This patient, like the last, bore the operation perfectly. She felt no pain from the incisions, and although the deep dissection which was required to remove the tumour from its attachment was felt as a severe drag or pull, it gave rise to no evidence of acute pain. The act of sponging the wound, and the insertion of one of the sutures, caused momentary expression of pain, but on the whole, she was throughout brave, perfectly collected, and as quiet as if she had been asleep. This patient, like the previous one, progressed so favourably that she was allowed to get up every day. On the fourth day after the operation, as she complained of the pressure of the pad, I removed the dressing, and found the wound freshly healed throughout its entire length, without a trace of supuration. In this act, however, a little misfortune occurred. A portion of the cotton wool adhered firmly, through the styptic colloid, to a loose end of the upper suture, and, while I was extricating the wool, an accidental movement of the patient caused the ligature to tear out of the upper lip of the newly-joined skin. From this slight point there flowed as much as a drachm and a half to two drachms of bright-red very thin blood. I stopped this bleeding, not very readily, by firm pressure with styptic wool; but a little further bleeding took place during the day beneath the compress and into the subcutaneous tissue, and gave rise to a superficial sore about the size of a sixpence. On the eighth day after the operation the patient was able to go out of doors, and, but for the slow healing of the small sore whence the hemorrhage proceeded at the first dressing of the wound, recovery rapidly succeeded.

"One other fact closely connecting this with the preceding case is worthy of particular notice. As this second patient began to rally from the operation, the distressing cardiac symptoms entirely passed away, the stroke of the heart improved in tone, the irritability ceased, and the faint murmur became imperceptible."

Dr. R. makes some interesting comments on the facts above recorded.

"1. *As to the effect of the local anæsthesia.*—This in both the cases afforded everything that could be desired in the way of anæsthesia. It saved all acute pain; it saved the patient the dread of death during the insensibility from a general anæsthetic, and it enabled me to proceed in our task without a thought as to the immediate safety of the patient. I may say more for it still. It warranted me in recommending the operation. I should certainly not have advised any friend of mine, whose heart was in the same condition of irritability and irregular nervous supply, to inhale an anæsthetic vapour to the fatal effects of which such conditions of the circulation are so favourable.

"2. *The method of cutting with scissors.*—Local anæsthesia has many disadvantages. It is more troublesome than general anæsthesia as a detail of practice, and, as it leaves the consciousness alive, it fails at times in preventing the fears of the patient. But hitherto the greatest difficulty in operating under it has been the obstacle of cutting through the hard, frozen, insensible part. The resistance to incision by the best cutting knife, and especially to dissection by the knife, is such that I have seen the most skilful surgeons troubled by it; and I have never been able to complain of the objection that has been made to the method, on this ground. The difficulty is now overcome by the process of scissor-cutting which I have here introduced. The advantage of the scissors over the scalpel will be at once proved by anyone who will take a thick, firm structure—the cover of a book for example—and try to cut through it. With the best of scalpels he will be troubled; but with scissor blades he will cut with the utmost facility, if the blades be well set. So, in cutting through the frozen animal tissue, the parts can be divided as rapidly as may be wished with the scissor blades, with perfect accuracy of incision, and as deeply as may be desired. The cutting is also made without any downward pressure, by which pain of pressure is saved. Also in deep dissection, the tissues, frozen as they are exposed, can be divided more easily than by the knife; for the harder they are solidified, the easier they are divided by the scissor blades. In a word, I believe that every cutting operation, in which local anæsthesia is practicable, may be performed neatly and effectively by scissor-cutting, and that a much larger number of operations may now be painlessly carried out under the local method.

"Some little attention requires to be paid to the instruments used. The scissors for superficial or skin cutting should be exquisitely sharp, neat, and strong; and I prefer them slightly curved. For deep cutting, where there are many bloodvessels, the tooth-edged cutters are valuable. These pierce, crush, and divide at the same time, and they save blood. For other purposes, as for division of a sinus, some modifications are required, and Messrs. Krohne and Senseman are now making for me a case of instruments for the special purpose of operation on the method under consideration.

"3. *The effect of the operation on the heart* I consider as extremely instructive. In both instances the cardiac irregularity and irritability were purely due to irregular nervous supply—to nervous irritation and consequent muscular exhaustion. The irritation might have been in part due to the mental anxiety which naturally accompanies the disease, or it might have been due to the irritation of the tumour, and have been reflex in character. Whichever view be correct, the result of the operation was curative, and, as the cases are typical of a class of phenomena of disease, the lesson they teach is extended far beyond them as individual illustrations. They show that so soon as the heart obtains rest from the persistent nervous thrill that invades it, its muscular tone returns, and its irregular motion and excitability cease. Thus by operating early for the removal of cancer the surgeon acts as physician also, and prolongs the general life by removing the local disease. I am convinced I have seen patients suffering of cancer die from the mental and local irritation of the disease long before any development of the malady has advanced to kill by destruction of the part or organ involved. I infer, therefore, that if, without any danger to life from general anæsthesia, we can remove external malignant growths painlessly and promptly, so soon indeed as they are detected, we shall bring art, effectively, to the defeat even of cancer."

40. *Superiority of Immobility to Resection of the Hip-joint in Suppurating Coxalæ; Disadvantages of Resection; Rarity of the Indication for it.*—This is the title of a paper read by M. VIENNOIS before the French Association for the Advancement of Science at its recent meeting. His conclusions, drawn from twelve cases in his own practice and from a certain number in the practice of Dr. Ollier, are that in most cases immobility by the silicated bandage and careful attention suffice to effect a cure.

This surgical maxim was supported by MM. Giraldes, Verneuil, and Ollier, who admitted the infrequency of reasonable indications for coxo-femoral resection.—*Gazette Hebdom.*, 28 August, 1874.

41. *Traumatic Tetanus successfully treated by Chloral and Morphia.*—M. BOURDY, of Mans, reported to the Surgical Society of Paris, a case of this. The subject of it was a man, *æt.* 29, who had received a wound of his head from a fall, January 27. Tetanus manifested itself thirty-six hours afterwards by rigidity of the muscles of the neck, and 8 grammes of chloral were given, which produced some benefit. On the 2d and 3d of February, the tetanic symptoms became worse; there was opisthotonos; 8 gr. of chloral were given and subcutaneous injections of morphia. This treatment was continued until the 15th of February, when the morphia was discontinued, but the chloral was continued. From the 19th to the 25th, the tetanus progressively diminished and gradually yielded to the chloral. During the duration of the disease the patient took 228 grammes of chloral, and gr. 1.82 of morphia, by subcutaneous injections or by the mouth. Dr. B. recommends the association of morphia with chloral in the treatment of tetanus.—*Journ. Hebdom.*, 19 June, 1874.

42. *Excision of the Scapula and nearly the entire Clavicle for Malignant Disease.*—Mr. C. S. JEAFFRESON, Surgeon to the Children's Hospital, Newcastle-on-Tyne, reports (*Lancet*, May 30, 1874) the following interesting case:—

“Miss S., a fair-complexioned, healthy young lady, twenty years of age, first consulted me in the commencement of July last. She complained of pain and swelling in the neighbourhood of the left shoulder-joint. Occupying the upper part of the left humerus was a large, somewhat ill-defined, swelling; it was deeply seated, and evidently underlying the various muscles which cover the upper part of that bone. At this time, at its largest portion, it measured in circumference twelve inches. There was little difficulty in diagnosing it to be a malignant growth from the bone; and, on inquiring into her family history, I discovered that her mother had died when about forty years old of uterine cancer.

“At this period amputation at the shoulder-joint was strongly urged upon my patient, but she would not consent. In the course of a few weeks the swelling rapidly enlarged, and the bone gave way in its centre. For a short period I now lost sight of my patient, who, in despair, had placed herself under the care of a bone-setter. The treatment she received at his hands did not tend to ameliorate matters, and, at the commencement of August, when she returned to me, the circumference of the humerus at its largest part was sixteen inches and a half. The swelling had spread upwards. Large veins ramified upon its surface, and it presented exactly the appearance of a case depicted in vol. ii., p. 108, of Mr. Erichsen's *System of Surgery*. Amputation was now performed at the shoulder-joint by means of a skin flap from the region of the deltoid. The stump healed rapidly, and for some few weeks there was no appearance of return of the disease.

“On examining the growth which was removed, it was found to be a large encephaloma surrounding the upper part of the shaft of the humerus. It had evidently grown under the periosteum, and the bone had given way in its centre. There was no enlargement or expansion of the fractured extremities, but they lay free in a cavity full of extravasated blood and broken-down encephaloid matter. No spiculæ of bone were detected in the substance of the new growth.

“In December I again saw Miss S——. At this period the whole of the stump was enlarged, and small fungating masses protruded from some portions of the old wound. But the chief indication of disease was a large swelling occupying the pectoral region. This swelling, which grew beneath the pectoral muscles, was of bony hardness, and firmly connected with the scapula and apparently the outer portion of the clavicle. When the scapula was put in action it moved freely in conjunction with it, and the skin over it was still fairly movable. There was no tenderness, but it was the seat of most excruciating pain, which radiated in the direction of what felt to her to be the arm and fingers. It was now obvious that nothing short of removal of the whole scapula and clavicle would be of any service.

“On the 14th of December, I performed the following operation: The patient, being fully anæsthetized, was placed upon her right side. An incision was made from the top of the acromion, passing a little above the spine of the

scapula to within an inch of the central line of the back. A second incision was then made from the lower part of the axilla, passing obliquely downwards to the central line of the back, corresponding nearly to the upper margin of the latissimus dorsi muscle. These two incisions were joined at their distal extremities by a perpendicular one, and thus the whole mass of integument covering the scapula was reflected. All bleeding vessels were carefully tied, and the patient placed upon her back. The second stage of the operation now commenced. An incision was made, commencing at the tip of the acromion, passing along the whole length of the clavicle, and ending at its sternal articulation. The clavicle was carefully freed of all its coverings, a flat director passed under it somewhat to the inner side of its middle, and upon this it was sawn across with a hand-saw; the inner fragment was seized with bone-forceps, and about an inch removed. With a silver knife the structures surrounding the subclavian vessels were freed, and the vessels so exposed that they could readily be grasped by an assistant. The third stage was now entered upon. The patient was again turned upon her side, the muscles rapidly detached from the scapula, and the skin detached from the lower triangles of the neck. The deeper attachments of the scapula and tumour were quickly divided, commencing at the lower angle, and gradually passing upwards. Finally, an incision was made, commencing at the junction of the inner with the middle third of the clavicle, and passing downwards and outwards to join the one which passed along the upper edge of the latissimus dorsi, and the whole mass was detached.

"The vessels were so perfectly controlled, owing to the previous division of the clavicle and the removal of a portion from its centre, that but comparatively little blood was lost; nevertheless, the evidences of shock were very great, and at the moment of detachment of the mass, death seemed imminent. In a short time, however, the patient revived.

"The flaps, when brought together, fitted very accurately, and were retained in position by eighteen points of suture, and in all seven ligatures were employed.

"It will be unnecessary to give a detailed account of the progress of the case. A great portion of the wound healed by the first intention. The patient was able to leave her room in less than a month.¹

"The length of the combined incisions measured in all about three feet.

"An examination of the parts removed proved of great interest. The bulk of the growth consisted of two oval masses of dense ivory-like bone, which, though in close apposition to each other, were not connected. Growing deeply in the angle between the inner surface of the scapula and the ribs, these masses had no absolute connection with any of the bones, although they had contracted extensive adhesions to the periosteum of the scapula. From their form I believed them to be ossified lymphatic glands, such as are occasionally met with in cases of osteoid cancer. The base of the stump was infiltrated with firmish encephaloid matter."²

43. *Ligature of the External Iliac in Elephantiasis.*—At the recent meeting of the Congress of German Surgeons, Professor HUETER, of Greifswald, exhibited a patient in whom he had in 1870 tied the external iliac for elephantiasis, which had in a very marked degree followed ulcer of the leg and repeated attacks of erysipelas of the extremity. The effect of the operation was very satisfactory, but about a year after its execution, amputation of the leg had to be performed on account of extensive and intractable ulceration. At the time of the amputation not the slightest vestige of the elephantiasis remained, nor has this recurred, although, when the ligature was tied four years ago, it extended as far as the inguinal region. Professor Hueter has operated four times, meeting as he does with a great number of these cases, the disease seeming to be

¹ Since writing the above paper, I regret to state, the disease has again recurred, but in a very slow form, and the girl is still enjoying good health.

² Dr. Jeaffreson appends to his paper a table of six similar operations performed respectively, Cumming, in 1808, Mussey, in 1837, Rigaud, in 1842, Fergusson, in 1874, McClellan, in 1838, and Syme, in 1863.

endemic in Mecklenburgh, Pomerania, and West Prussia. Three of the cases recovered, and one terminated fatally, the patient becoming the subject of delirium tremens, and dying with the septic process set up near the site of the ligature. Another patient exhibited was a woman, upon whom the ligature had been applied five years before for an elephantiasis, accompanied by so horribly stinking a discharge as to render her existence in society a nuisance. The limb is now very nearly in a normal condition, and she is able to go about her household affairs. The first patient alluded to has been obliged also to submit to the removal of a testis on account of caseous disease of it; so that he has undergone three operations, and yet is quite well, and even—at all events, temporarily—cured of a marked propensity for drinking. It is to be remarked that at the amputation of his leg the bleeding from the tibial arteries was so slight that there was great difficulty in detecting their orifices at the surface of the stump, and tying them was scarcely necessary.

Professor Bryk, of Cracow, observed that he had tied the femoral artery immediately under Poupart's ligament in three cases. The first was a peasant woman, twenty-nine years of age, in whom the elephantiasis was complicated by an ulcer of the leg. After the ligature the swelling was much reduced, and the ulcer cicatrized. In less than a year, however, amputation of the leg had to be performed, partly on account of a recurrence of the tumour, and partly because of an obstinate spreading of the ulcer. The patient did well, and is still living. A young woman, aged twenty, had a relapse some months after the ligature, and having undergone amputation of the leg on account of the dreadful pain in the foot that accompanied the swelling, died of pyæmia. The third patient, a blacksmith aged thirty, found, ten months after the operation, that the tumour was recurring, but by aid of a flannel roller he has been enabled to prevent its reaching its former size.

Professor Bardeleben observed that he found the disease as frequent in Berlin as in Pomerania. The patients, however, are very unwilling to be operated upon. He prefers compression, either digital or by means of a compressor, as a much less dangerous procedure than ligature of the iliac or femoral, and by its means he has treated two cases with apparent success. One of these he has seen three years after leaving the hospital, and then the disease had not reappeared, but ulceration had broken out in the leg.—*Med. Times and Gaz.*, July 4, 1874.

44. *Treatment of Gluteal Aneurism.*—Mr. TIMOTHY HOLMES, in a lecture on gluteal aneurism, delivered before the Royal College of Surgeons (*Med. Times and Gaz.*, June 13, 1874), thus summarized the treatment:—

1. When either traumatic or spontaneous, rapid or gradual compression applied to the aorta or common iliac should be tried.
2. If this treatment does not succeed by itself, it should be supplemented by coagulating injections or galvano-puncture during anæstheticism and compression.
3. When such treatment fails, either the internal iliac must be tied in one set of cases, or the old operation or Anel's ligature resorted to in another set as pointed out above.
4. The ligature of the internal iliac is liable to failure in cases of spontaneous aneurism from a diseased condition of the coats of the artery, and should always be avoided when other means of treatment are available.

45. *Surgical Treatment of Inguinal and Femoral Aneurism.*—Mr. TIMOTHY HOLMES, in his third lecture before the Royal College of Surgeons of England (*Brit. Med. Journ.*, July 4, 1874), presented the following *résumé* of his views:—

1. The operation of ligature of the external iliac artery has been, on the whole, fairly successful, as evidenced by a very small mortality in uncomplicated cases of hemorrhage, and a mortality of about one-fourth in published cases of aneurism—a conclusion supported by the unpublished records of hospital practice, though a few cases of recurrence of the aneurism have occurred.
2. The operation on the superficial femoral for aneurism situated in Hunter's canal is a very successful operation.
3. The ligature of the common femoral is a perfectly justifiable proceeding, though whether it be more or less trustworthy than that of the external iliac artery, we are not as yet in a position to judge.

4. Ruptured aneurism in the thigh has been treated with a large amount of success by the old operation.

5. Ilio-femoral and femoral aneurisms have been treated with a very fair proportion of cures in the few instances on record by rapid compression applied to the aorta or to the common iliac; but there is no evidence to show that this treatment is less dangerous or more successful than the operation on the external iliac artery, when the latter is feasible.

6. Compression, especially digital pressure, has been applied to the treatment of inguinal and femoral aneurism with striking success, though in what proportion of cases we do not as yet know; and the comparative ill-success of this method in our hospital-practice is more calculated to raise doubts of the efficiency of the application than of the soundness of the method itself.

7. In rare cases, direct pressure, or even manipulation may be advantageous.

8. Arterio-venous femoral aneurism should be treated by double compression, applied to the vein and artery, which failing, Mr. Spencer's method of tying the artery above and below is the most hopeful measure, and, when this is impracticable, either the old operation should be performed, or the case abandoned.

9. Spontaneous aneurisms of the profunda have been diagnosed and successfully treated by compression.

10. Recent traumatic aneurisms of branches of the external iliac or femoral are best treated as wounds of these vessels—*i. e.*, either by compression or by ligature at the wounded point.

46. *Treatment of Popliteal Aneurism.*—Mr. TIMOTHY HOLMES, in a lecture on popliteal aneurism, delivered before the Royal College of Surgeons (*Brit. Med. Journ.*, Aug. 8, 1874), gave the following as the conclusions as to the treatment of popliteal aneurism to which our present experience points.

1. Rapidly growing aneurisms, with a thin or imperfect sac, are best treated by immediate ligature, especially when caused by recent violence; and the success of compression is doubtful in aneurisms growing towards the knee-joint, and in all others which advance rapidly.

2. The Hunterian ligature has been about twice as successful in modern hospital practice in this country, as the results of the accepted statistics show it to have been.

3. The results of the compression treatment in the same hospitals have given as yet about the same average results as those of the ligature, but these results might be much improved by a more careful employment of the method.

4. Too long persistence in compression is to be deprecated, as being likely to interfere with the success of the ligature.

5. Flexion is often successful when used so as not to distress the patient, and is worthy of a trial in all cases in which it stops or materially checks the pulsation, but should not be long persisted in when it is not at once beneficial.

6. We have no evidence showing the utility of or the need for the less usual forms of treatment, such as galvanism, coagulating injections, manipulation, temporary ligature, or the introduction of foreign bodies.

47. *Treatment of Hemorrhoids by the Injection of the Tincture of Chloride of Iron.*—Dr. WM. COLLES, surgeon to Steeven's Hospital, considers hemorrhoids as a vascular growth resembling nævus in children, or erectile tissue in adults. Under this view he recommends (*Dublin Journ. Med. Sci.*, June, 1874) the treating them as we do nævus by the hypodermic injection of the chloride of iron to excite a certain amount of inflammation, and secure the coagulation of the blood in the minute vessels composing the growth, and their subsequent absorption. He relates a case in which he practised this plan with success. The piles being forced down, about twenty minims of the ordinary tincture of the chloride of iron was injected by means of an hypodermic syringe into each hemorrhoidal tumour. This caused but little pain. 2. Four weeks afterwards the section was examined by means of a speculum, and no trace of the piles could be discovered, except three nodules of cuticle, each the size of a shrivelled currant.

48. *Removal of Tumour from the Bladder.*—Dr. SCHWAIGHOFER gives (*Irish Hospital Gazette*, July 15th) the following account of an operation recently performed by Prof. BILLROTH for the removal of a tumour from the bladder of a boy twelve years of age. "Until ten months ago, he had been very healthy, but then began to complain of pain in passing water. He experienced it both in the glans penis and in the region of the bladder, but it was not very severe. The urine soon became cloudy, and the desire to pass water used to come on so suddenly, that the boy would not have time to reach a urinal. The medical man, under whose care the patient was in the country, diagnosed a urinary calculus, and the parents accordingly brought him to Vienna for operation. He was tolerably well nourished, rather pale, and well grown for his age. On examination with the sound, the bladder could be reached without difficulty, and when there the instrument glided over a rough surface. On percussion, however, no hard body could be discovered. The pain caused by the examination was not very severe. In consequence of the urine being usually passed in bed, from the sudden necessity which he could not control, it was only with difficulty that small quantities of it could be collected. It was very cloudy, had a weak, acid reaction, contained a considerable amount of albumen, and, after having stood for some hours, it formed a sediment at the bottom of the vessel, consisting principally of mucus and pus. When a distension of the abdomen, caused by constipation, which lasted for several days, had subsided, a tumour in the region of the bladder could be distinctly felt through the abdominal walls. It was slightly painful upon pressure. It could also be felt upon examination per rectum; its consistence was very much that of a fibroma, and it seemed to spring from the bladder. Further examination showed that the walls of the bladder were greatly hypertrophied; the sound, however, came in contact with no hard body within the bladder. A combined examination with the sound and per rectum, confirmed the opinion that the tumour was in connection with the bladder. This last examination gave considerable pain, and was followed by slight hemorrhage. The patient was very feverish for some days. When the fever had abated, Billroth undertook the operation. There was little doubt but that a tumour was present within the bladder; however, as there might also be a calculus contained in a diverticulum of the mucous lining of the bladder, Billroth determined, in the first instance, to perform a lateral lithotomy, and then, if his supposition was confirmed, and the tumour was adherent to the bladder, to make the high operation and so remove the growth. The lateral incision was made in the usual way. Upon passing the finger into the bladder, a tumour, the size of an apple, could be easily felt growing from the posterior wall of the bladder, but its pedicle could not be found. The high operation over the symphysis pubis was at once performed. It was with some difficulty that an opening could be made in the bladder in this place, without wounding the peritoneum, in consequence of the organ having contracted when the urine flowed off; but, in the end, the object was successfully effected, although the peritoneum was extensively exposed. The tumour grew with a short and tolerably broad pedicle from the posterior wall of the bladder, and very high up, as could be distinctly felt by fingers passed simultaneously through each wound. Notwithstanding an enlargement of the upper wound which was made, the opening proved still too small for the removal of the tumour through it, and Billroth then tried to break up the growth with his fingers. At first he only succeeded in breaking off small portions of the rather soft tumour, but finally he tore off the entire tumour from its pedicle, and compressing it somewhat at its centre, was able to remove it through the upper wound. It was now easy to draw out through the same aperture, that portion of the wall of the bladder upon which the tumour had been situated, so that the short pedicle of the latter, about two centimetres broad, became visible. This was then dissected off from the bladder, and, in order to do so effectually, it was necessary to go deep into the muscular layers of the wall, so that the peritoneum was again in danger of being wounded. This was fortunately avoided. Two small arteries had to be secured, and the ends of the ligatures were drawn out through the lower wound. In this manner the tumour had now been thoroughly removed. The wounds remained open, and for the purpose of allow-

ing the urine to flow off easily, a drainage tube was passed through from the upper to the lower wound, and let lie. Since the operation the patient feels relatively well, having fevered but slightly. The wounds look remarkably well, notwithstanding the contusion which they must have suffered during the operation. Microscopical sections made from every part of the tumour showed beyond controversy that it was a pure myoma. Both on account of its pathological rarity, and of the ingenious boldness of the operation, the case is one which I imagine will be of general interest."

49. *Billroth's Case of Extirpation of the Larynx and Epiglottis.*—The patient upon whom Billroth extirpated the larynx for the removal of carcinomatous growths of that part (see No. of this Journal for April, p. 556) and for whom a very ingenious vocal apparatus was afterwards contrived (see No. of this Journal for July, p. 268) suffered from a return of the disease soon after his return home which proved fatal on the 7th July last, a little over six months after the operation.

OPHTHALMOLOGY.

50. *Treatment of Exophthalmic Goitre with Belladonna.*—Dr. R. T. SMITH relates (*Lancet*, June 27, 1874) two cases of exophthalmic goitre in which, after trying for months without success the various remedies advised for this affection, he was induced to try in the first case belladonna, as a mere experiment, on two grounds: first, that the disease is considered by some to be essentially a paralysis of the cervical sympathetic; secondly, the statements of Dr. John Harley and Dr. Meryon, that belladonna is a stimulant of the sympathetic. Five minims of the tincture were given every hour. Compared with previous treatment the effect was surprising. In two days the pulse was 90, the palpitation very materially relieved, and the outbursts of perspiration very much subdued. In four days the pulse was 80, and on the fifth day the patient walked from King's Cross to Paddington and back again. For ten days no other drug was given, and it had once to be suspended owing to an intercurrent attack of diarrhoea. The dose was then reduced to fifteen minims four times a day; subsequently iron was added.

The relief of the palpitation, of the quick, throbbing pulse, and of the profuse perspiration was, so to speak, immediate. The patient was restored to comfort and ease in a fortnight. Amelioration in other respects was gradual, and is still progressing. The diplopia was removed in six weeks. It was quite two months before decided improvement in the exophthalmos could be reported.

In the second case, for three months he tried in succession, iron, digitalis, valerianate of zinc, ice to the neck, aconite, iodine internally, and the constant current, with very little if any relief. In July I began the use of belladonna, giving five minims of the tincture every hour. The effect in relieving the palpitation, reducing the frequency of the pulse, and in subduing the "flushings" and perspirations, was quite as manifest as before; but meanwhile other symptoms had appeared—namely, severe headache, occasionally followed and relieved by copious epistaxis, and attacks of angina, which were on two or three occasions so severe as to require the administration of chloroform. Belladonna alone quickly relieved all these symptoms, and in a month's time she might fairly be considered cured. The muddiness of the complexion was gone, and her natural expression was restored; the pulse was 70, and the palpitation removed. But the thyroid gland has undergone little reduction, and has become firm and hard by a fibroid change.

It is a rather interesting fact that in both patients there was a considerable development of fat after the relief given by belladonna. In both cases there have been some recurrences of the symptoms, but they have speedily given way on resuming the treatment. The drug was not given during sleep, and it is noteworthy that reduced doses sufficed as the treatment was continued.

Harley states that moderate doses cause contraction, large doses dilatation of the arteries; and it is therefore of great importance that the varying susceptibility of individuals in reference to this drug be kept in mind.

But as there are cases of palpitation quite unassociated with exophthalmos and enlargement of the thyroid, which are greatly benefited by belladonna, it is possible that in the above two cases the relief given was primarily through the heart, the drug acting sedatively thereon.

51. *Removal of Opacity of the Vitreous Body by the Electrical Current.*—M. LE FORT, in a paper read at the Académie de Médecine on July 7 (reported at length in the *Gazette des Hôpitaux* of the 9th), described the success which, in two cases of blindness due to opacity of the vitreous body, had attended the permanent application of feeble continuous electrical currents. One of these occurred in 1872, and the other in 1874, sight being recovered in both in five or six weeks by the use of a current derived from only two pairs of elements, applied at first permanently, and afterwards only at night. These cases have occurred during a series of investigations he has been engaged in for the past two or three years, having for their object the substitution of the continuous current, feeble in degree, but permanent in operation, for energetic and temporary currents in the treatment of paralyses, muscular contractions, and lesions of nutrition. Encouraged by the success of these cases, he is now trying this therapeutical procedure in other lesions of nutrition, such as cataract, atrophy of the papilla, etc.; but his observations are as yet too recent to warrant more than directing attention to the subject. He believes, however, that this substitution is indicated in paralysis with atrophy, and wherever we desire to exert a continuous action on the functions of an organ.—*Med. Times and Gaz.*, July 18, 1874.

52. *Results of Cataract Operations.*—Dr. ALBERT MOOREN gives, as the result of 1500 operations by Von Graefe's method, 6 to 6½ per cent. of loss. In thirteen of these cases he performed iridectomy with the purpose of creating conditions which would remove any danger arising from the artificial hastening of the maturity of an unripe cataract. Every case succeeded, and three of them had both eyes operated on. The method of procedure was as follows: From eighteen to twenty-one days after an iridectomy had been made, the coloboma of the iris having been dilated by atropia, the lens-capsule was opened by a dissection-needle in about three-fourths of its circumference. Great care was taken not to hurt the iris in any way, and disturbance of the lens-substance was avoided as much as possible, so as to obtain a homogeneous and perfect cataractous formation, which is not so apt to cause irritation of the uveal tract as when the lens is unequally hardened. After the full reaccumulation of the aqueous humour, instillation of atropia was resorted to, and the pupil kept under the influence of it till the extraction, which was performed in from eight to twenty-one days, according to the arrival of the cataract at maturity. He says it is particularly applicable to posterior polar cataract.—*London Med. Record*, July 22, 1874.

53. *Bader's Operation for Conical Cornea.*—Dr. CHARLES BELL TAYLOR reports (*Lancet*, June 20, 1874) eight cases operated on by him by this method, which consists: first, in shaving off the apex of the cone and suturing the wound, and second, by simply opening the anterior chamber by means of the removal of a minute flap, and leaving the wound to heal without any further interference. The results in these cases were most satisfactory. In only one was any trouble occasioned by the operation, and this he suspects was due to the excision of too large a flap of the cornea. The operation he admits requires considerable dexterity. He has seen no reason, so far as his experience goes, to dread extensive adhesions of the iris, if the operation is carefully performed and atropia employed afterwards; while the corneal scar is so slight that he has not in any of his cases found it necessary to tint the cornea for cosmetic defect.

54. *On the Ophthalmoscopic Appearances of the Optic Nerve in Cases of Cerebral Tumour.*—In a paper on this subject in the *Dublin Journal of Medical Science*, June, Dr. FITZGERALD relates a case of *Stauungs-papilla*, and gives a short *résumé* of the theories which have been put forward to account for this congested condition of the disk in cases of cerebral tumour. He particularly desires to correct what he considers a widely-spread but erroneous impression, "that Von Graefe regarded the *Stauungs-papilla* as absolutely diagnostic of the presence of a cerebral tumour," and points out that Graefe looked upon this condition of the disk as "merely the expression of increased intra-cranial pressure." Dr. Fitzgerald concludes his paper by insisting that, though the appearances of the disk in *Stauungs-papilla* cannot be looked upon of themselves as of any special diagnostic value, those appearances, combined with a careful study of all the symptoms in any particular case, must prove of invaluable assistance in forming a diagnosis.—*London Med. Record*, July 1, 1874.

55. *Extraction of a Piece of Steel from the Vitreous Humour by the Magnet; Recovery with almost Perfect Vision.*—A most extraordinary case of this is recorded (*Brit. Med. Journ.*, June 20, 1874) by Dr. Wm. A. McKEON, Surgeon to the Ulster Eye Hospital. A boy, æt. 15, while striking a rivet was struck by a fragment from the hammer in the corner of the right eye. The sphincter of the pupil was cut at the outer margin, and the iris at that part towards its peripheral attachment. The boy could count fingers easily. The ophthalmoscope showed no trace of opacity of the lens; and the fundus of the eye could be seen distinctly, except a small part at the temporal side. Deep in the vitreous body at that part were observed, by direct illumination, opacities situate near to the retina, and showing a marked tendency to a dependent position, as if somebody were pulling them down. Sometimes, at the lower part of one of the opacities, a silvery streak appeared, as if from the sharp margin of a bright metallic body. On throwing the light obliquely from the mirror held to the left of the middle line of the patient, and placing my eye in such a position as to receive the rays reflected from the opacities, they appeared red, with a very lustrous aspect, as if some bright reflecting substance were imbedded; whilst the margin before referred to could also be recognized. To all present at the examination, the evidence of the presence of a foreign body, masked by a slight effusion of blood in the vitreous, was convincing. The metal had taken an extraordinary course, as, after penetrating near the centre of the cornea, wounding the iris, and passing behind it, it turned round the margin of the lens, apparently without wounding it, and entered the vitreous body.

The next day the patient suffered great pain, and the media of the eye had become so cloudy the foreign body could no longer be detected. After full consideration as to the best method of procedure, Dr. McK. obtained a magnet about eight inches long, one inch broad, and one line thick, and tapering at both extremities to a blunt point.

"The patient having been etherized, I made an incision about two and a half lines in length in the sclerotic at the outer part, about two and a half lines from, and parallel to, the corneal margin. A pair of iridectomy-forceps were introduced into the vitreous humour, but they failed to touch the body. I then tried the magnet. I introduced the pointed end into the vitreous humour as far as its shape would admit, and directed it backwards towards the posterior pole of the eye. The foreign body was felt to become detached; but it was only on the third trial that I had the satisfaction of withdrawing the metal on the end of the magnet. It was oval in shape, about a line long, and half a line broad, sharp on the edge, particularly on one side. The thickest part was about a quarter of a line. It weighed half a grain.

"Although the magnet seemed a clumsy instrument to thrust into the eye, yet it answered the purpose admirably—it fulfilled the important indication of perfectly preventing loss of vitreous humour during the operation. The foreign body was twice removed from the magnet by the grasp of the margins of the sclerotic wound. For this reason, it would be an advantage to have on each side of the end of the magnet a little slide, which could be pushed down about

a line past the extremity of the magnet, so as effectually to shield the foreign body from contact with the edges of the wound at the time of withdrawing the instrument from the eye.

"The vitreous body, whilst it retains its structure, offers great resistance to the passage of a foreign substance through it by magnetic attraction. Suppose a piece of metal to be under the influence of the magnet, and that the vitreous body between the substance and the magnet be sound, the most powerful magnet will not draw the foreign body through the vitreous humour; but the vitreous humour, if there be space to move in, will move in mass with the body, and attempt at extraction will fail. Hence it is necessary that the vitreous humour intervening should be broken up, so as to make a passage whereby the metal may pass. The knife by which the incision is made should be used for this purpose, or even the end of the magnet itself.

"The boy remained in hospital three days, and was subsequently treated as an extern patient. The treatment consisted in the instillation of a solution of atropia and the application of the compress bandage. No pain was felt after the operation; the media of the eye cleared rapidly; and the vision improved from day to day. In a short time, the wound in the cornea was scarcely perceptible; the iris, where it was cut and bruised, seemed to atrophy, the rest of it remaining healthy; the lens retained its transparency; the vitreous body showed some slight filmy opacity where the foreign body had been lodged. The field of vision was perfect, save the small part to the nasal side corresponding to the part of the retina in the neighbourhood of the wound.

"On the 13th of December last, I brought the patient before the members of the Ulster Medical Society, when we found the state of matters above described. I tested his vision, and found that he could read No. 2 of Snellen's types at one foot—a degree of acuity extremely satisfactory. In fact, the boy notices very little difference between his eyes. He resumed his work soon afterwards, and has continued well ever since."

MIDWIFERY AND GYNÆCOLOGY.

56. *Induction of Premature Labour.*—Dr. J. G. SWAYNE reports (*Brit. Med. Journ.*, Aug. 8, 1874) twenty cases in which he induced premature labour. From the statistics of these cases, it appears that of the twenty cases in which the operation was performed, seventeen were multiparæ, and three primiparæ. In one case the operation was performed three times in the same individual, and in three, twice. With regard to the morbid condition which rendered the operation necessary, we find that, in the greater number of cases, viz., fourteen out of twenty, it was deformity of the pelvis. The subjects of this deformity were all of them multiparæ. In the remaining six cases, the operation was rendered necessary in three by obstinate vomiting, and in three by albuminuria. Of the first three, two were primiparæ. Of the last three, two were multiparæ. In one of these, the albuminuria was complicated with jaundice.

With respect to the period when the operation was performed, we find that, in by far the greater number, viz., sixteen out of twenty, it was during the eighth month of pregnancy. Of the remaining four, in one it was during the ninth month, in two during the seventh, and in one during the fourth month. In these last three, when it was necessary to operate before the fœtus was viable, great deformity was the cause in the first two, and obstinate vomiting in the last.

The great utility of the operation as an alternative for craniotomy in cases of deformed pelvis has been so universally recognized, that I need say no more on that head; there has, however, not been quite so general a consent as to its utility in cases of obstinate vomiting attending pregnancy, and in albuminuria causing anasarca and threatening convulsions. Of course, in cases of obstinate vomiting, the operation is only to be performed as a last resource, when all remedies have failed, and the patient is in imminent danger of starva-

tion; and this remark especially applies when the infant has not yet arrived at the age of viability. I have performed the operation three times for this cause. In two, it was attended with the happiest results, the patients being apparently snatched from the jaws of death. In another, it was unfortunately too late to save life. In all three, the patients were all but moribund.

I remember once being called to a lady, nearly six months pregnant, suffering from obstinate vomiting, whose condition appeared so desperate, that I told her husband that, if I did not find her better on the next day, I should at once bring on labour. I was again summoned to her on that night, because labour pains had set in; and she was very shortly delivered of twins. Her condition at once improved; all vomiting ceased, she speedily regained flesh and strength, and from that time made a rapid recovery. Nature thus anticipated me, and pointed out, in the most convincing manner, the proper course to be adopted in such cases.

In the three cases of albuminuria in which I had recourse to premature labour, the affection was of a very obstinate character, and attended with peculiar risk. Thus, in the first, there was much general anasarca and commencing effusion into the chest. These symptoms rapidly disappeared after delivery, and the child also was saved. The second case, however, did not end so favourably. This patient had repeatedly miscarried two or three months before the full term. In each instance, the fœtus had gradually become feeble, and its movements had ceased before it was expelled, its death apparently having been caused by a most extraordinary and abnormal development of the placenta. When I induced labour, the health of the mother had suffered very much, and her condition had become very critical. She had long suffered from obstinate vomiting, jaundice was commencing, and the urine not only contained albumen, but a considerable quantity of bile. The operation was resorted to quite as much to save her life as that of the child. Unfortunately, it was not performed sufficiently early to save either.

In the third case, in which albuminuria was the cause of the operation, the urine, when boiled, was nearly solid with albumen, and there was considerable general anasarca. The patient, during a previous labour, being in the same condition, had nearly lost her life from puerperal convulsions. On this occasion, the operation was attended with the best results as regards the mother; but the child, probably poisoned by the maternal blood, only survived six hours.

I have never had occasion to deliver prematurely in order to save the life of the child, when, without any apparent reason, the death of the fœtus has regularly taken place a few weeks before the full term. Such cases, however, have occurred to others, and the propriety of the operation has been recognized ever since the time of Denman.

The next point for consideration is the mode of performing the operation. In my first two cases before the year 1850, labour was induced by the old-fashioned methods, viz., by puncturing the membranes and giving ergot in No. 1, and by detaching the membranes around the os in No. 2. After the time mentioned, having read Sir J. Simpson's memoirs on the subject, I always commenced the operation by dilating the os uteri mechanically before puncturing the membrane—a method which is much superior, because it more exactly imitates the natural process of labor. To puncture the membranes before there is any dilatation of the os is to put the cart before the horse, and to invert the process of labour; and, therefore, it is no wonder that such a proceeding, especially when combined with the use of ergot, is more apt to endanger the life of the child from compression of the cord.

Accordingly, in all my other cases (with one exception), labour was invariably commenced by dilating the os uteri. In that, the condition of the mother was so critical, that very prompt delivery was necessary, without reference to the child, and there was already some dilatation of the os uteri.

Dr. S. prefers carbolized sponge-tents for the purpose of dilating the os uteri very much to Dr. Barnes's elastic bags, because they effect the process of dilatation more steadily, continuously, and gradually, and therefore imitate more exactly the natural process of dilatation, which frequently occupies several

days from its first commencement. As a general rule, it is not desirable to dilate the os too rapidly, especially when the time for that operation falls considerably short of the full term, for then there is a proportionally greater thickness of the os uteri to overcome.

Unless there be some special circumstances present which render prompt delivery necessary, it is never advisable to induce premature labour with that rapidity which Dr. Barnes enumerates as one of the advantages of the elastic bags, when he remarks "that it is just as feasible to make an appointment at any distance from home to carry out at one sitting the induction of labour as it is to cut for the stone." This is, no doubt, one great advantage which we can derive from the use of the elastic bags; but still it is one of which we should do well not to avail ourselves, except under very exceptional circumstances. The chief objection. I think, to the elastic bags, is the difficulty of introducing them. Unless the os uteri is tolerably low, and open enough just to admit the tips of the two fingers, it will be much safer to commence the dilatation with a tent of tangle or sponge.

The opposite extreme, of occupying too much time in the process of dilatation, is also to be avoided.

The time occupied by premature labour artificially induced, Dr. S. says, is very variable. In his cases, the shortest time was six hours, the longest sixteen days: the average three days.

As to the result of the operation to mother and child: In the twenty cases three mothers died after the operation. In two of these the condition was desperate, and in only one case was death clearly the result of the operation.

Eleven infants out of the twenty were stillborn, and of those born alive two died subsequently.

On the whole, Dr. S. remarks, as regards the maternal mortality the induction of premature labour has not, in my hands, shown a more favourable result than the operation for which it is an alternative—viz., craniotomy, which in my own practice has proved fatal in two cases only out of thirty-four. In three of my twenty cases, the induction of labour gave rise to very severe and alarming symptoms resulting from shock, such as excessive rigors, pain in the back, with abdominal tenderness, and a pulse of 130; so that I cannot altogether endorse the statement of Dr. Churchill, when he says that "there is unquestionably *some risk* incurred by the mother, but not more than by an accidental premature labour."

Although the saving of infant life effected by this operation is an advantage which far outweighs any of the disadvantages just mentioned, yet the accoucheur should, I think, always bear in mind that it is a proceeding attended with some risk, and involving a great amount of responsibility—such an amount, indeed, that he ought always, if possible, to share it with another practitioner.

57. *Puerperal Convulsions*.—Dr. THOMAS MOORE MADDEN read an interesting paper on this subject before the Dublin Obstetrical Society (May 9, 1874). He discussed the etiology of the disease, its classification, symptoms, and treatment.

With regard to the latter he states (*Dublin Journ. Med. Sci.*, June, 1874) that it must be considered in reference to the state of the patient in each instance.

In all cases prevention is better than cure, and hence the importance of an early recognition of the premonitory symptoms, as by timely prophylactic measures we may sometimes succeed in warding off impending convulsions.

In this prophylactic treatment our objects are—first, to relieve the kidneys; secondly, to assist the efforts of nature to purify the blood; and, thirdly, to soothe the nervous irritability peculiar to these cases. The first object may be attempted by cupping and fomentations over the loins, the free use of diluents, and the cautious administration of mild diuretics, and especially by colchicum, in small and guarded doses. The second intention may be fulfilled by saline aperients as well as by diaphoretics, if the skin be harsh and dry, and the third by sedatives, especially bromide of potash and belladonna.

The therapeutic indications in cases of puerperal eclampsia are—first, to

arrest the convulsive action; and, secondly, to remove the cause of its recurrence.

During the convulsions the ordinary precautions, such as loosening the patient's clothing, and preventing her from biting her tongue, by inserting any suitable substance between the teeth, or from injuring her person in any way by proper restraint, should, in the first instance, be attended to.

One of the most effectual means of shortening the paroxysms is cold affusion in a small stream from a moderate height on the head and face. This remedy is of considerable antiquity, being recommended by Valescus, of Tarenta, in a work¹ originally published in the year 1482. It was reintroduced into practice on the authority of Denman, who derived great benefit in such a case by merely sprinkling his patient's face with cold water during the paroxysms—a very different practice, I may observe, from the copious cold affusions now recommended. In the asthenic form of eclampsia this remedy should be used cautiously. It should not be employed except during the convulsions, nor persevered in so long as to depress the circulation unduly.

In all cases the *primæ viæ* should be unloaded, as soon as the convulsions commence, by a bolus of calomel and jalap, or by a drop of croton oil placed on the tongue. Enemata of assafœtida and turpentine, suspended in thin gruel, may also be resorted to, and repeated if necessary.

The head should be shaved if possible, and the back of the scalp freely painted over with liquor epispasticus, whilst, at the same time, a bladder loosely filled with ice may be laid over the front of the head. The feet and calves of the legs should be enveloped in mustard poultices, until a decided rubefacient effect is produced.

In cases of sthenic puerperal convulsions, *venesection* is, notwithstanding the disusage into which blood-letting has fallen in all other diseases, still the only remedy of undoubted efficacy in subduing the convulsive action. If the patient be plethoric, and her pupils be contracted, showing cerebral congestion, we may, as a rule, bleed. If, on the contrary, the pupils are dilated, the condition of the brain may be considered as anæmic, and blood-letting would probably be out of the question. This rule is liable to many well-known causes of exception, as the state of the pupil may normally vary widely in different individuals, as well as be affected by various toxic agents.

The amount of blood that may be taken from a plethoric woman, suffering from eclampsia, should be measured by the patient's condition and the effect produced, rather than by the quantity abstracted. In one case I took nearly forty ounces of blood, and within a few hours twelve ounces more, but without any benefit. Generally, however, a very much smaller bleeding will suffice, and, as a rule, not more than from eight to twelve ounces of blood should be taken.

Chloroform is still regarded by some authorities as the remedy *par excellence* for puerperal convulsions: and though, according to my experience, this is an exaggerated estimate of the value of this anæsthetic, its inhalation is of unquestionable use in many cases. In hysterical convulsions, if sprinkling the face with cold water does not suffice, a few whiffs of chloroform will generally cut short the attack. In true puerperal convulsions, however, in which I have used chloroform pretty extensively in the manner originally suggested by the late Sir James Simpson, and have kept patients under its influence for several hours at a time, it requires to be used with great caution, its exhibition being obviously contraindicated where either the circulation is depressed, or where there is any tendency to apoplecticiform symptoms. But in suitable cases I have found chloroform most serviceable in subduing the convulsions and prolonging the intervals between them. If it be inhaled only during the paroxysm, chloroform appeared to have no effect in shortening the attack; but if exhibited before its expected return, it often prevents its recurrence for hours together, and gains time, during which the labour may be completed, and the patient placed in comparative safety.

¹ Valescus de Tarenta, Philon. Pharmaceut. et Chirurg. Lib. i., c. 27, p. 92. Franca, 1599.

Chloral was suggested by myself in a paper published four years ago, and has since been employed with varying success by other practitioners in England and America.

Opium, though recommended upon high authority,¹ is, in my opinion, clearly contraindicated in all cases of eclampsia during labour in which there is any tendency to apoplecticiform symptoms.

The *tincture of veratrum viride* has been used as a substitute for blood-letting in cases of puerperal convulsions by Dr. Fearn, of Brooklyn. Dr. Fearn exhibited this remedy in very large doses in ten cases of this kind—"there being," he says, "no danger from the medicine as long as the convulsions continue."² I should, myself, prefer some safer plan of treatment than these heroic doses of so powerful a drug.

Belladonna was originally introduced into practice in these cases by M. Claussier fifty years ago,³ and has again been recommended by recent writers. My own experience in those cases in which I have seen it tried, would not lead me to attach any value to this drug in the treatment of eclampsia during labour. But in convulsions occurring before and after parturition, I have found small doses of belladonna most beneficial in calming the nervous susceptibility so intimately connected with convulsive action.

In every case of convulsions during labour our primary object should be to deliver the patient as speedily as is consistent with her safety and that of the child. This rule of practice was long since pointed out by Mauriceau—"La convulsion est un autre accident qui fait souvent perir la mère et l'enfant, si la femme n'est très promptement secourue par l'accouchement qui est le meilleur remède qu'on puisse apporter à l'une et à l'autre."⁴

The convulsions do not always cease when delivery is effected, or may even commence after it. Still these cases afford no argument against the general principle that, puerperal convulsions being obviously connected with the state of the gravid uterus, the sooner this condition is terminated the sooner will the convulsions cease. The manner of accomplishing this purpose must depend on the stage and character of the labour in each case. But if the symptoms be at all urgent, the former consideration may be in a great measure disregarded, and we should not then hesitate to deliver our patient by either version or the long forceps as soon as the os uteri can be opened sufficiently to enable us to do so. In these cases only, despite Dr. Blundell's excellent aphorism, "meddlesome midwifery," is not necessarily "bad midwifery."

With regard to the manner of effecting this, as a rule the dilatation of the os goes on during the convulsions, and by keeping our patient under chloroform we may generally attend the natural occurrence of the second stage of labour before being obliged to deliver. But in some cases, as I very recently had an instance, the os, after expanding to a certain extent, becomes rigid and undilatable, the convulsions meanwhile recurring with increasing violence. In such cases the perforator and crotchet were formerly freely resorted to. Thus, in no less than eight of Dr. Collins's thirty cases of convulsions, delivery was effected in this way. I cannot regard embryotomic or child-destroying operations as justifiable, even in these cases, for we now have it in our power to effect delivery without resorting to them, by dilating the os uteri with Dr. Barnes's dilators, or, where these fail, by incising the contracted circular fibres of the os with a guarded bistoury, as originally suggested by M. Dubosc of Toulouse, in 1781, so as to allow a living child to be delivered. Such an operation should, however, be only regarded as the *ultima spes*, and confined to those rare cases

¹ Manning on Female Diseases, p. 357: London, 1775. Romberg, a Manual of the Nervous Diseases of Man, Sydenham Society's Translation, vol. ii. p. 190: London, 1853. Schwartz. Ueber Eclampsia der Kreissenden, p. 54: Riga, 1851.

² Fearn, American Journal of Obstetrics, May, 1871, p. 28.

³ Claussier, Considerations sur les Convulsions qui attaquent les Femmes Encientes: Paris, 1823.

⁴ Traité des Maladies des Femmes Grosses, par François Mauriceau, 7th Edition, Tome Première, p. 335: Paris, 1740.

in which the delivery of a living child from a living mother cannot be effected by less hazardous means.

58. *Anæsthesia in Obstetrics; Nélaton's Method of Resuscitation from Chloroform Narcosis.*—Dr. J. MARION SIMS, of New York, read at the recent meeting of the British Medical Association, a paper on this subject, from which we make the following extracts:—

“Dr. CHARLES JAMES CAMPBELL, the distinguished accoucheur of Paris, has recently written two papers on anæsthesia in obstetrics,¹ in which he ably sustains the views long taught by Nélaton, that death from chloroform is due to syncope or cerebral anæmia. And amongst other strong arguments to prove his position, he gave a graphic description of a case of chloroform narcosis, which occurred in my practice in Paris, where M. Nélaton, by his method, unquestionably saved the life of the patient. She was young, beautiful, and accomplished, and belonged to one of the oldest and best families in France. Married at twenty, she gave birth to her first child a year afterwards. The head was enormous (hydrocephalic), impacted in the pelvis nearly twenty-four hours, and the delivery of a dead child was ultimately accomplished with instruments. Dr. Bouchacour, of Lyons, was called in consultation, and applied the forceps. In a week afterwards, the urine began to dribble away, and in a fortnight an immense slough was thrown off. The case, surgically considered, was one of the most interesting I ever saw, and the operation was one of the most difficult I ever performed on any one in her station in life. The base of the bladder was destroyed, and the fundus fell through the fistulous opening; it was therefore inverted, and protruded between the labia majora as a herniary mass of the size of an apricot, its external covering being the internal or lining membrane of the bladder, which was of a deep vermilion red colour. The vaginal portion of the cervix uteri and the posterior *cul-de-sac* were destroyed; and by the reparative process, the cervix and the posterior wall of the vagina were blended into one common cicatricial mass, which was firm, inelastic, and immovable. The case appeared desperate, and M. Nélaton had pronounced it incurable. A preparatory operation was necessary, viz., to open the cervix uteri, by dissecting it from the posterior wall of the vagina, and thus to reconstitute the canal of the vagina up to the canal of the cervix; and by a subsequent operation, to draw forward the flap thus formed, secure it to the neck of the bladder anteriorly, and thereby close the fistula. The first, or preparatory operation, was performed at the country house of the family near Dijon, on November 3, 1861, Dr. Dugast, of Dijon, assisting, and giving chloroform. The second, or operation for the radical cure, was performed on the 19th of the month at St. Germain, about an hour's distance from Paris by rail. M. Nélaton, Dr. Campbell, Dr. Beylard, Dr. Johnston, and Mr., now Dr., Alan Herbert, were present. I seldom give an anæsthetic in private practice for operation on the walls of the vagina, as the pain is generally not sufficient to call for it. But in this case, as the slightest touch was unbearable, an anæsthetic was indispensable. Dr. Campbell was selected by the family, as well as by M. Nélaton and myself, to administer the chloroform, especially as he was in the daily habit of giving it in his large obstetrical practice, and we all had entire confidence in his caution, skill, and judgment. The patient was soon anæsthetised. The operation was begun at 10 A.M., and I thought it would require about an hour to finish it.

“Many years ago I imbibed the convictions of my countrymen against chloroform in general surgery, and have always used ether in preference, never feeling the least dread of danger from it under any circumstances. It is otherwise with chloroform, and in this particular case I felt the greatest anxiety, frequently stopping during the operation to ask Dr. Campbell if all was going on well with the patient. At the end of forty minutes the sutures (twelve or

¹ 1. *Mémoire sur l'Anesthésie Obstétricale*; 2. *Etude sur la Tolérance Anasthésique Obstétricale*, par le Dr. Charles James Campbell, Ancien Interne de la Maternité de Paris, Ancien Chef de Clinique Obstétricale de la Faculté de Paris. G. Masson. 1874.

thirteen) were all placed, and ready to be secured, and I was secretly congratulating myself that the operation would be finished in a few minutes more, when all at once I discovered an unusual bluish livid appearance of the vagina, as if the blood were stagnant, and I called Dr. Johnston's attention to it. As this lividity seemed to increase, I felt rather uneasy about it, and I asked Dr. Campbell if all was right with the pulse. He replied, 'All right, go on.' Scarcely were these words uttered, when he suddenly cried out. 'Stop! stop! No pulse, no breathing;' and looking to M. Nélaton, he said, 'Tête en bas, n'est-ce pas?' Nélaton replied, 'Certainly; there is nothing else to do.' Immediately the body was inverted, the head hanging down, while the heels were raised high in the air by Dr. Johnston, the legs resting one on each of his shoulders. Dr. Campbell supported the thorax. Mr. Herbert was sent to an adjoining room for a spoon, with the handle of which the jaws were held upon, and I handed M. Nélaton a tenaculum, which he hooked into the tongue, and gave in charge to Mr. Herbert; while to Dr. Beylard was assigned the duty of making efforts at artificial respiration, by pressure alternately on the thorax and abdomen. M. Nélaton ordered and overlooked every movement, while I stood aloof and watched the proceedings with, of course, the most intense anxiety. They held the patient in this inverted position for a long time, before there was any manifestation of returning life. Dr. Campbell, in his report, says it was fifteen minutes, and that it seemed an age. My notes of the case, written a few hours afterwards, make it twenty minutes. Be this as it may, the time was so long that I thought it useless to make any further efforts, and I said, 'Gentlemen, she is certainly dead, and you might as well let her alone.' But the great and good Nélaton never lost hope, and by his quiet, cool, brave manner, he seemed to infuse his spirit into his aids. At last there was a feeble inspiration, and after a long time another, and by and by another; and then the breathing became pretty regular, and Dr. Campbell said, 'The pulse returns, thank God; she will soon be all right again.' Dr. Beylard, who always sees the cheerful side of everything in life, was disposed to laugh at the fear I manifested for the safety of our patient. I must confess that never before or since have I felt such a grave responsibility. When the pulse and respiration were well re-established, M. Nélaton ordered the patient to be laid on the table. This was done gently. But what was our horror, when, at the moment the body was placed horizontally, the pulse and breathing instantly ceased. Quick as thought, the body was again inverted, the head downwards, and the feet over Dr. Johnston's shoulders, and the same manœuvres as before were put in execution. Dr. Campbell thinks it did not take such a long time to re-establish the action of the lungs and heart as in the first instance. It may have lacked a few seconds of the time; but it seemed to me to be quite as long. For the same tedious, painful, protracted, and anxious efforts were made as before; and she seemed, if possible, more dead than before; but, thanks to the brave men who had her in charge, feeble signs of returning life eventually made their appearance. Respiration was at first irregular, and the pulse could then be counted; but it was very feeble, and would intermit. I began again to be hopeful, and even dared to think that at last there was an end of this dreadful suspense, when they laid her horizontally on the table again, saying, 'She is all right this time.' To witness two such painful scenes of danger to a young and valuable life, and to experience such agony of anxiety, produced a tension of heart and mind and soul that cannot be imagined. What, then, must have been our dismay, our feeling of despair when, incredible as it may seem, the moment the body was laid in a horizontal position again, the respiration ceased a third time, the pulse was gone, and she looked the perfect picture of death? Then I gave up all as lost; for I thought that the blood was so poisoned, so charged with chloroform, that it was no longer able to sustain life. But Nélaton, and Campbell, and Johnston, and Beylard, and Herbert, by a consentaneous effort, quickly inverted the body a third time, thus throwing all the blood possible to the brain, and again they began their efforts at artificial respiration. It seemed to me that she would never breathe again; but at last there was a spasmodic gasp, and, after a long while, there was another effort at inspiration; and, after another long interval, there was a third; they were 'far between;' then we watched, and waited, and wondered if there would ever be a fourth; at length it came,

and more profoundly, and there was a long yawn, and the respiration became tolerably regular. Soon Dr. Beylard says, 'I feel the pulse again, but it is very weak.' Nélaton, after some moments, ejaculated, 'The colour of the tongue and lips is more natural.' Campbell says, 'The vomiting is favourable; see, she moves her hands; she is pushing against me.' But I was by no means sure that these movements were not merely signs of the last death-struggle; and so I expressed myself. Presently Dr. Johnston said, 'See here, doctor; see how she kicks; she is coming round again;' and very soon they all said, 'She is safe at last.' I replied, 'For Heaven's sake, keep her safe; I beg you not to put her on the table again till she is conscious.' This was the first and only suggestion I made during all those anxious moments, and it was acted upon; for she was held in the vertical position till she, in a manner, recovered semi-consciousness, opened her eyes, looked widely around, and asked what was the matter. She was then, and not till then, laid on the table, and all present felt quite as solemn and as thankful as I did; and we all in turn grasped Nélaton's hand, and thanked him for having saved the life of this lovely woman.

"In a few minutes more, the operation was finished, but, of course, without chloroform. The sutures were quickly assorted and separately twisted, and the patient put to bed; and, on the eighth day thereafter, I had the happiness to remove the sutures in the presence of M. Nélaton, and to show him the success of the operation.

"I have detailed the circumstances of this interesting case at great length, because I believe it goes as far to establish a principle of treatment as any one case ever did, or possibly can.

"If the recovery had been complete and perfect with the first effort at reversing the body, there might have been a doubt whether the vertical position was really the cause of resuscitation; but, when the horizontal position was again and again followed by a cessation of all evidence of life, and when life was again and again re-established by a position that favoured only the gravitation of the blood (poisoned as it was) to the brain, the inference is very clear that death in such cases is due to syncope or cerebral anæmia. Exhaust the brain of blood in any way, and death follows. Fill it speedily with blood again, and life returns."

Dr. S. related a second case to illustrate this treatment, which he stated had been resorted to successfully by Dr. Schopert, of New Orleans, and E. L. Holmes, of Chicago.

"Ten years ago, there was a story prevalent in Paris that M. Nélaton had derived the hint of reversing the body in chloroform-poisoning from a discovery accidentally made by his little son, then some seven or eight years old; that the little boy had killed some mice with chloroform; that, without thought or reason, he had taken up a dead mouse by the tail, and was twirling it round, when, to his surprise, it began to manifest signs of life, and recovered entirely, while the mice left lying were dead; and that the great surgeon was thus taught a great lesson, if not by babes and sucklings, at least by a little boy. This is a very pretty story as it is, and it seems a pity to spoil it. A few days ago, when in Paris, I called to see young Nélaton (who is now a student of medicine, and will graduate next year), and I asked him for the facts of the mouse story. He said that when they lived on the Quai Voltaire, the house was infested with mice; that great numbers were caught in traps almost daily; that he was in the habit of killing them with chloroform by covering the trap with a napkin and pouring the chloroform on it; and that his only idea was that of an easy death for the mice. One day, when he had given a happy despatch to some mice, his father accidentally came into the room, and, seeing the dead mice, he told his son if he would take up one by the tail, and hold it with the head downwards, that it would revive, while the others would not. He did this, and found it was true. And he told me that he had, when a boy, performed the same experiment on mice some forty or fifty times or more, and always with the same unvarying result. He says that he has often heard his father speak, not only of the case that occurred at St. Germain, but of other cases that he had saved in the same way before the time of the mouse story, which dates back to 1857 or 1858."

"I believe that obstetrics may take a lesson from Nélaton's method of resusci-

tation, by adopting it in cases of threatened death from *post-partum* hemorrhage. Let us not be satisfied with simply placing the head low; but let us, in addition to the means usually adopted, invert the body, and throw what little blood there is left in it wholly to the brain. I have never seen a death from uterine hemorrhage; but from recollections of the few alarming cases I have witnessed, I now feel sure that recovery might have been hastened if I had known of and adopted Nélaton's method of inversion.

"Whether death from chloroform is due to cerebral anæmia or not, it is at least safe to adopt Nélaton's method in all cases of supposed or threatened danger; but I think the safest plan is to relinquish the use of chloroform altogether, except in obstetrics. The frequent cases of death from the use of chloroform in surgical operations that have occurred amongst us, even of late, should warn us to give up this dangerous agent, if we can find another that is as efficient, and, at the same time, free from danger. Ether fulfils the indications to a remarkable degree; but, while it is safe, it is unfortunately unpleasant to the physician and bystanders, as well as to the patient. He who will give us an anæsthetic as pleasant to take as chloroform and as safe as ether, will confer the greatest boon upon science and humanity."—*Brit. Med. Journ.*, August 22, 1874.

Another equally remarkable case of apparent death from chloroform narcosis relieved by inversion was related by Sir JOHN ROSE CORMACK, which occurred in his practice. Several times the patient relapsed into alarming unconsciousness on being replaced in a horizontal position, and each time on inversion of the body resuscitation followed.

59. *Accidents that may happen to Pregnant Women suffering from Disease of the Heart.*—Dr. MICHEL PETER, of Paris, in a paper read before the Section of Medicine of the British Medical Association, remarked that women suffering from an organic disease of the heart, who become pregnant, are exposed to accidents that may strike the lungs, impede gestation, and aggravate the state of the heart. The pulmonary accidents are production of an extremely rapid double congestion of the lungs, with spitting of blood, and asphyxia, or capillary bronchitis, or lobular pneumonia, or double pleurisy. The accidents of gestation are miscarriage, with the death of the fœtus. The cardiac accidents are the acceleration or aggravation of the general disorders attending organic diseases of the heart, namely, dyspnœa, painful palpitation, visceral congestion, anasarca. Pulmonary accidents and miscarriage happen ordinarily towards the middle of the gestation, and especially in the course, or towards the end, of the fifth month. These results were derived from eight cases, four observed by the author, and eight by Professor Sée, at La Charité, in Paris; M. Budin, house physician at the Hospital St. Antoine, in Paris; and M. Seuvre, house physician at La Maternité, of Paris; each of those physicians having observed their cases after their attention had been called upon these facts by the author. All these women but one were not at their first gestation; they had their attacks, one at her second pregnancy, three at the third, one at the sixth, one at the fifteenth; and one of them, after having miscarried at her third gestation, miscarried again at her fourth and fifth; another, who miscarried at her sixth gestation, had again two successive miscarriages; at length the one who miscarried at her fifteenth gestation had also two successive miscarriages. The meaning of these facts is, that their heart was a fatigued one, both by the increase of work caused by pregnancy, and the more remote date of the disease of the heart. The production of the pulmonary accidents is due to the augmentation in the total mass of the blood, which increases necessarily as increase the wants of the fœtus. Thence the occurrence of these accidents, not at the beginning of the pregnancy, but after some months. The augmentation in the total mass of the blood, caused by pregnancy, produces, physiologically, plethora in the lungs, and, in some women, dyspnœa, and even spitting of blood. The disease of the heart involves morbid congestion of the lungs, hence a pregnant woman with disease of the heart is doubly exposed to pulmonary accidents. The gestation produces an hypertrophy of the left ventricle, so that morbid regurgitation of blood in the lungs is increased by the state of heart. In seven

cases, the organic disease of the heart was an insufficiency of the mitral valve (complicated, in two cases, by a stricture of the orifice). In one case only the disease was a stricture of the aortic orifice. Two of the women died in consequence of their pulmonary accidents and miscarriages, and the six who recovered were afterwards rendered miserable by the severe and permanent aggravation in the disorders of the disease of their heart. The recovery was due to medication both energetic and rapid. The practical consequences of these facts are the following: 1. A woman diseased at the heart should not be a mother; 2. If she become pregnant, the physician must attentively survey her respiratory functions, and intervene energetically as soon as pulmonary disorders begin; 3. If the woman be safely delivered, she must not nurse her child, in order not to fatigue more her diseased heart; 4. Reciprocally, when a pregnant woman suffers towards the middle of her pregnancy, very severe pulmonary disorders, or when she miscarries by them, the physician must consult her heart, and perhaps he will thus discover a disease of the heart till then unknown or mistaken. In the cases observed by Dr. Peter there were no symptoms of toxæmia.—*Brit. Med. Journ.*, Aug. 29, 1874.

60. *Explanation of the Rigor which so often attacks Puerperal Women immediately after the Birth of the Child.*—There have been many explanations given of the cause of this rigor, agreeing only in not considering it pathological, but physiological.

PFANNKUCH (*Archiv f. Gen.*, Band iv. Heft 2), after noticing the principal of these, as, for instance, the sudden loss of blood; the sudden withdrawal of the blood from the surface, caused by the emptying of the uterus, and consequent lessening of the pressure to which the great vessels have been subjected; the exposure of the woman during the latter part of labour, or her lying in sheets damp with the escape of the waters; and after giving reasons for being dissatisfied with them all, adds the following explanation of his own: The experiments of Wurster have shown that the temperature of the fetus in utero is at least 0°·9 higher than that of the mother. It follows from this that every pregnant woman has a second centre of warmth in her uterus; but her own temperature is not thereby increased, so she must be producing less warmth than if not pregnant. The moment the child is born, and this centre of warmth removed, there is at once a disproportion between the amount of heat produced and that given off; the effort to bring about an equilibrium is what causes the rigor. The intestines are, it is well known, most susceptible to heat and cold, and it is from their immediate vicinity that this source of heat is removed. The uterus, too, having sunk down towards the pelvis, the intestines come to touch the abdominal walls, which are often very much thinned, and thereby suffer a further loss of heat, which produces a powerful influence on the nerve centres.

This view is further supported by the fact that if the child dies during pregnancy, the mother is often subject to rigors, and complains of a feeling of coldness in the abdomen. It follows at once from this, that, if the view that Pfannkuch takes is correct, there can in such cases be no rigor following the birth of the child. In the few cases of this sort that he has had since embracing the above theory, there was no such rigor; and he thinks, that, should a rigor occur under such circumstances, we should give a guarded prognosis, the cause of such being probably pathological.—*Irish Hospital Gaz.*, Sept. 1, 1874.

61. *A New Sign of Pregnancy.*—In the *Annales de Gynécologie*, March 15, 1874, M. le Prof. PAJOT describes a new sign of pregnancy, which he calls “le choc fœtal,” or the fetal impulse. The sensation it conveys to the hand of the person making the examination is similar to that conveyed by ballottement; but it differs from ballottement in being produced by an active and spontaneous movement on the part of the fetus. It is available before the other certain signs, and is therefore most valuable in cases of doubtful pregnancy at the third or fourth month. Of course it is not always to be felt, and this may entail on the patient the unpleasantness of several examinations.—*Irish Hospital Gaz.*, Sept. 1, 1874.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Delivery of a Child weighing only one pound and three-quarters; Child now Living. By GEO. A. MURSICK, M.D., of Nyack, New York.

Dr. Isham, in his article on Premature Births (in the April No. of this *Journal*), states that, after considerable research, he is only able to find recorded four cases of *small* births, of two pounds and under, which lived and increased to a period beyond any doubt of their inherent capacity to exist. He gives a brief history of the four cases referred to, and reports two cases of his own, making six in all. These cases—aside from their general interest to the practitioner—are of importance from a medico-legal point of view. I therefore report the following case which occurred in my practice.

CASE. On the morning of the 29th of April last, I was called to attend Mrs. M., a young married woman, whom I found in labour with her first child at the beginning of the eighth month of her pregnancy. I was informed that the waters had been dribbling away for a week, in small quantities, and that during the previous afternoon a large quantity had come away with a "sudden gush," since which time she had had pains at irregular intervals. The os was but slightly dilated. During the day the pains increased in force and frequency, the os gradually dilated, and early in the evening she was delivered of a male child which weighed *one pound and three-quarters*. It appeared well formed, and healthy. As the mother had no milk, it has since been nursed from the bottle. It is now more than three months old, is thriving, and weighs three and one-quarter pounds. I am quite certain that the period of gestation could not have been much over seven months, for the reason that the mother called at my office on the 25th of Nov. 1873, for relief from a supposed "bladder disease," for which she had been treated by a neighbouring practitioner for several weeks, without benefit. Upon examination, I found the uterus *retroverted and enlarged*, the cervix pressing against the urethra; and upon questioning her, she informed me that she "had missed" her last menstrual period, and that it was not yet time for the next one. I informed her that she was probably pregnant, which she doubted; but time proved the correctness of the diagnosis. The retroversion was relieved, and the womb held in proper position by a Hodge's lever pessary, which she wore for two months, after which she had no further trouble until I was called to her confinement.

Case of Double Uterus. By O. COOLEY, M.D., of Chicago, Ill.

J. R., æt. 33, consulted me May 30, 1873; she was in the thirteenth year of her married life, had borne three children, and suffered four miscarriages. The last of these occurred two years since at the fifth month of utero-gestation. Six hours after the expulsion of a well-formed foetus

and placenta, she discovered a sac in the vagina, which immediately ruptured, and a second foetus with appendages complete was extruded. She detailed an accurate history of intra-uterine inflammation, extending over a period of eight years, which was confirmed by investigation. The menses, after several irregular and defective returns, had entirely ceased two months before.

Constitutional and local treatment were employed, the latter involving caustic applications to the lining membrane of the uterus, to its fundus, weekly during June, July, August, and part of September. Late in July a tumour presented in the anterior wall of the vagina, midway between the os uteri and bladder, presumed to be an abscess in the cellular tissue. It however remained unchanged, and soon its upper margin was distinctly felt above the pubis, irregularly globular, lying at the right of the linea alba. The tumour steadily increased, and was the seat, at intervals, of distressing pain of a burning, tearing nature. Movements indicative of foetal life were detected in September, and local remedies withheld. The developments of the following month compelled a belief in the existence of an extra-uterine pregnancy. November 9th, in consultation, Drs. Byford and Heydock thoroughly examined the patient. A double uterus, or uterus with two cavities, was the explanation of the unusual phenomena arrived at. The points of differential diagnosis between the two conditions are given in the language of Dr. Byford:—

“The thickness of the tissues covering the foetus is too great to be formed by the abdominal wall alone, and the motions are too distinct to justify the opinion that the ovum is in contact with the abdominal peritoneum. The foetal head occupies the brim of the pelvis; ballottement can be performed very perfectly. The tissues underlying the head seem to mount up around it, and when the finger is carried up beside the head the envelope appears the same in thickness as in ordinary pregnancy. The finger cannot be passed up between the uterus, in which the probe is inserted about four inches, and the head of the foetus.” “I have not seen,” writes Dr. Byford further, “a case of extra-uterine pregnancy where these conditions all existed. Generally the foetus is felt very near the abdominal walls; the motions are very obvious; the head does not occupy the brim of the pelvis; ballottement is impracticable, and when the foetus is near the pelvic brim, fingers may be carried around the uterus, and this organ be isolated from the substance of the ovum.”

The correctness of these views was confirmed ten days later by the birth of a living child of from six to seven months' development after a perfectly natural labour of four hours' duration. Absolute proof was afforded of the existence of two cavities, in May of this year, by Dr. Byford, which I have had frequent opportunities of confirming. An examination revealed a cervix normal in length, but broader than is usual at the base. The os externum perfectly natural. A sound passed readily to the fundus of a cavity, the axis of which pointed a little to the left of the median line. Depth $2\frac{1}{4}$ inches. A second sound found entrance near the first, but turned to the right and required a sharper curve to follow its canal. Depth $1\frac{3}{4}$ inches. When rotated the sounds could not be approximated nearer than from $\frac{1}{3}$ to $\frac{1}{2}$ an inch excepting where they crossed in the cervical canal.

The two uteri are therefore side by side, the right a little anterior, and their axes slightly divergent. Both are included in one envelope, but separated by a firm wall, and capable of development as witnessed in the gestation described.

CHICAGO, Sept. 7, 1874, 260 E. Halsted Street.

Rigidity of Os Uteri treated by Chloral. By F. S. THOMAS, M.D., of Macedonia, Iowa.

I have employed hydrate of chloral in a number of cases of "rigidity of the os," with the best results. I first try to dilate by the usual method (with index and middle fingers). If this fails, as it surely will in some cases, I resort to chloral given in doses of ten to fifteen grains every ten to fifteen minutes, until the desired effect is produced.

I have never failed to hasten labour, or to change it from the first to second stage, when the first stage of labour has been prolonged by an undilatability of the os uteri. I would not advise giving chloral in sufficient doses to produce complete anæsthesia. Since I began using chloral in my obstetrical cases (about a year ago) I find by comparison with previous years, that I am not detained more than one-half as long as heretofore.

Chloral Hydrate in Malarial Congestion. JNO R. TAYLOR, of Kosse, Texas, writes to us that chloral hydrate with bromide of potassium has a magical effect in relieving malarial congestion. He thinks that the chloral has some peculiar specific effect on malarial poison.

Hair-pin in the Female Bladder. Reported by F. S. SHARPE, M.D., of Natchez, Miss.

On the morning of the 5th of March Dr. Jno. C. Inge and myself were sent for to visit Miss K., and learned "she had a hair-pin in the place the water comes from." Thinking she might be mistaken, we examined the vagina and uterus very cautiously, and afterwards introduced a female catheter into the urethra, but failed at first to detect the pin; after further exploration, however, I distinctly felt the foreign body in the bladder.

As our manipulations gave her pain and produced exhaustion, we postponed further operations and directed her to remain quietly in bed until our next visit. On the 11th we called again, and found her very comfortable; I attempted now to grasp the pin with a pair of long-handled forceps, but failed. We then decided to dilate the urethra with a sea-tangle tent, which was introduced on the evening of the 12th, when dilatation gradually followed until the diameter of the urethra reached one-half an inch, sufficiently large for the hair-pin to pass unassisted during the next urination. After this the case progressed satisfactorily, neither inflammation, irritation, nor incontinence following.

The pin is 3 inches long, and was covered almost entirely with an earthy deposit, and passed out of the bladder through the urethra *points foremost*, without exciting the least irritation or giving the slightest pain.

The history of the case, as far as the introduction of the pin is concerned, is not altogether satisfactory.

According to her statement, on the night of the 28th of February, whilst in bed, "she felt something crawling about her privates," took a hair-pin to relieve herself of the unpleasant sensation, and soon fell asleep. Next morning she did not mention the fact to her parent, but tried several times each day to remove the pin, until the morning of the 5th of March, when she passed with her urine a large quantity of blood; this alarmed her and caused her to acquaint her mother with the circumstance, and we were then consulted.

An important fact connected with this is that the gradual dilatation

was *not* followed by incontinence of urine, though Dr. Emmett¹ reports seven cases of incontinence caused by dilatation, and declares the method neither safe nor justifiable.

Notwithstanding this *dictum* of so high an American authority, I followed the practice of Hôtel Dieu, Paris, and the practice in the Dublin hospitals, and with the happiest result.

Report of a Case of Gunshot Wound of Head. By J. F. GLADNEY, M.D., of Homer, La.

A robust negro, aged 24 years, received, July 29th, 1874, at 2½ o'clock P. M., a gunshot wound, the ball penetrating the cranium, through the frontal bone, about one-fourth of an inch above the frontal eminence on the right side, passing through the gray and white matter of the right hemisphere, the distance of three inches, then passing between the lobes, and was found at the autopsy lodged near the centre of the occipital bone. The negro stated that his face was turned downwards when shot. I saw the man soon after the wound was inflicted.

He was rational, circulation good, and suffering but little pain. I was informed that for about fifteen minutes after receiving wound, the patient was unconscious. I visited him frequently until his death, and he was in full possession of his mental faculties, asking for water, and taking the fluid nourishment prescribed. He related (on the fourth day) the circumstances which led to his receiving the wound, his statement corresponding with that made by others. He slept well at night, but during the day suffered occasionally with paroxysms of pain, which were invariably relieved by one-eighth grain of morphia. Bowels readily moved with sulph. magnes. No evidence of paralysis about the limbs, tongue, or facial muscles. Taste unimpaired. Pulse ranging from 70 to 80. On second day the temperature as indicated by thermometer was 99°. The mercury in instrument used stands at 98½ in health. On the other days the temperature was normal.

Death occurred at 6 o'clock, on the morning of July 4th following. About three hours before death he suffered severe pain, and became comatose one hour before death.

DOMESTIC SUMMARY.

Treatment of Fractures of the Femur by Immovable Apparatus, and especially by Plaster of Paris on the form of Continuous Roller.—The number of the *New York Med. Journ.* for August last has an extremely interesting paper on this subject by Dr. FRANK H. HAMILTON, who is high authority in regard to the matter. His conclusions he thus expressed: While I recognize the convenience and utility of plaster of Paris, and of other immovable forms of dressings, in the treatment of certain fractures, it has not proved satisfactory, under my observation, when applied in the treatment of fractures of the femur; and especially when applied immediately after the occurrence of the fracture—my own method of treating these fractures, without perineal bands, with side-splints, adhesive-plaster extension, pulley and weight, having given better results (with no accidents) in the adult. In the case of children, my double thigh-splint has

¹ Vide Vesico-vaginal Fistula from Parturition and other causes, with cases of Recto-vaginal Fistula, by Thomas Addis Emmett, M.D., p. 42.

also given better results than has plaster of Paris. These methods are far in advance of the double-inclined planes, and of Desault's, Boyer's, Hagedorn's, Gibson's, and other long splints. They avoid all danger of ligation and strangulation of structures; there is no perineal band to cause ulceration; extension is made by a method which equally—when properly applied—shuns the danger of ulceration about the heel, an accident so common with the old gaiter the patients are comfortable; the limbs are seldom united with deformity; and the average shortening is less than with any other method yet devised. From these methods to the method now employed so much at Bellevue, is, in my opinion, a step backward.

Condition of a Faithful Measurement of the Thigh.—The fact that a man walks without a halt is no evidence that there is no shortening of the limb. In this regard patients are very unequal; one, having a shortening of only half or three-quarters of an inch, will limp perceptibly; while another, with a shortening of one inch or even one inch and a half, may not limp at all. This has been observed repeatedly. Nor is it any evidence that the limb is not shortened because, while lying in bed, the heel of the broken limb can be brought down to the level of the other. By pitching the pelvis, the spine remaining erect, the heel may be made to descend, in most persons, two inches or more.

Measurements made from the symphysis pubis, or from the round end of the anterior superior spinous process, are unreliable.

The patient should repose upon his back, upon an even surface, with his lower extremities as nearly as possible in a line with the axis of his body, the two wings of the pelvis being in the same horizontal (transverse) line.

A flexible, graduated tape-line is to be preferred to the steel tape-measure. The foot being steadied by an assistant, the surgeon should put his thumb-nail against the line where it joins the ring, and push his nail into the skin just below the anterior superior spinous process of the ilium, pressing firmly up and back, the back of his nail resting upon the skin. In this he obtains a fixed point, and he can obtain an exactly corresponding point upon the opposite side. Below, the measurement may be made from either malleolus, but the outer has the most defined extremity, and is generally preferred. In most cases, for some months after the close of the treatment there is some œdema about the ankle, which renders it necessary to use great care in determining the point of the malleolus. The thumb-nail of the opposite hand may be used for this purpose, resting vertically upon the skin (flat against the lower end of the malleolus).

There are a few sources of error which cannot be avoided. Occasionally, but very rarely indeed, as the observations of Prof. C. La Ford have shown, the malleoli of the two limbs are of unequal length; and, in a few very rare cases, one limb is congenitally, or from defective growth, shorter than the other.

Prolapse of the Umbilical Cord, its Cause and Treatment.—Dr. GEO. J. ENGELMAN, of St. Louis, concludes an elaborate article on this subject (*Am. Journ. Obstetrics*, Aug. 1874) with the following *resumé*:—

"I will sum up in a few words the facts and the laws established by the examination of our prolapse cases.

"The causes of the prolapse of the umbilical cord have mainly proved to be such circumstances as prevent the complete filling of the pelvic brim, and the close adaptation of the lower segment of the uterus to the presenting part. One of the more important of these circumstances is the shape of the presenting foetal part itself, and we thus find that foot presentations are most frequently complicated by prolapse, whereas vertex presentations are least threatened.

"The foetal appendages are of secondary and minor importance; undue length of the cord, its marginal insertion, or attachment of the placenta low down in the uterus can never be direct causes of the accident; excess of liquor amnii is alone to be feared.

"Some stress is to be laid on abnormality in shape and position of the womb, much more upon twin births. More dangerous than any of these is the contracted pelvis, which I have proved by measurements and numbers to be the main cause of prolapse of the funis, directly and indirectly; a fact hitherto

generally accepted, but never as yet clearly established. Another such vague, general statement, that the prolapse is by far more frequent among multiparæ than among primiparæ, our cases disprove; they show that primiparæ are, comparatively speaking, almost as frequently afflicted as multiparæ.

"The law governing the location of the prolapse is of importance, and here for the first time touched upon; it will, I trust, be verified by the investigation of other observers.

"The post-mortem examinations revealed only the lesions due to death from asphyxia, nothing characteristic for death caused by prolapse of the cord.

"The prognosis we can give is somewhat better than generally allowed; most favorable for foot presentations, after these for shoulder and transverse presentations, while vertex presentations are more dangerous than any; the case being, under all circumstances, more threatening when occurring in a primipara.

"In the treatment of our cases the high importance of the postural method has been developed, more as an adjuvant, however, than as a method in itself of dealing with the prolapse.

"Version is comparatively the most successful of all operations, and should be more frequently resorted to when any choice of method is given, as in head presentations; the application of the forceps and reposition of the cord are less to be relied upon; but whatever may be the course determined upon, it must be borne in mind that the success of all operations, by which we seek the preservation of the child, whose life is threatened by compression of the prolapsed cord, is in a measure dependent upon the judicious use of chloroform, its application to full surgical anæsthesia."

Aneurism of the Left Subclavian Artery Cured by Distal Ligation.—Mr. R. A. McLEAN reports (*Western Lancet*, July, 1874) the following case, which occurred in Prof. TOLAND's clinic at the San Francisco City and County Hospital.

John Cross, æt. 50, miner, was admitted into Prof. Toland's ward, Jan. 8, 1874, suffering from a large pulsating tumour at the root of the neck, on the left side. Its superior surface was limited internally by the sterno-clavicular articulation and anterior margin of the sterno-cleido-mastoid muscles, and externally by a point beneath the anterior border of the trapezius, just above its clavicular origin. In the interval between the sterno-mastoid and the trapezius, it formed an ovoid tumour apparently as large as the closed hand. Auscultation and palpation elicited the usual signs of subclavian aneurism, which were well marked in every particular.

The patient first noticed a slight enlargement above the clavicle a year before, but its progress had been slow until within the two months prior to his admission into the hospital. During this time, however, it had increased rapidly in size. Partial paralysis of the left arm had occurred, from pressure upon the brachial plexus, and pressure upon the thoracic duct, interfering with nutrition, had caused anæmia to a considerable degree. A tonic course of treatment and good diet were prescribed, and kept up until January 24th—a period of nearly three weeks. During this time the tumour continued to increase in size, but the patient's general health was so much improved that Professor Toland decided to operate Saturday, January 24th. The Professor thought the Hunterian operation impracticable, as the tumour involved the first as well as the second and third parts of the vessel; and he accordingly selected the distal operation. The third portion of the axillary artery was chosen for the seat of the ligature. The artery was secured by double ligatures. The pulsation in the tumour was perceptibly lessened immediately after the ligature, and gradually decreased up to the sixth week from the date of the operation, after which no pulsation or bruit could be discovered. The ligatures came away on the twentieth day after the operation, and the wound healed a few days afterwards.

Since the circulation has ceased in the tumour, it has gradually grown smaller and less painful. The collateral circulation has become fully established, the paralysis has almost entirely disappeared from the arm, and the pressure upon the thoracic duct is evidently much less, as the patient has gained considerably in weight. His general health is good, though the left arm is slightly œdema-

tous. from pressure upon the subclavian vein. The tumour is at least one-third smaller than when the operation was performed. It is hard to the touch, and is evidently being rapidly absorbed.

This case is a remarkable one, showing as it does the benefit of surgical interference in a condition almost hopeless. Hitherto, cases involving such extensive disease of the artery, have usually terminated fatally. The Hunterian, or proximal, operation was deemed impracticable on account of the deep situation of the healthy portion of the vessel, and the large size of the tumour, which of itself would have proved an insurmountable obstacle, covering as it did the route by which the vessel might have been reached in a case not involving so great a degree of disease of the artery. Galvano-puncture and the distal ligation remained as the last resort. The latter was chosen with the view of resorting to the galvano-puncture if Brasdor's operation failed. It happily succeeded, which with a former case of Professor Toland's, are the only successful cases recorded of the distal ligation for the cure of subclavian aneurism. Gross has collected twelve cases of ligation of the subclavian artery in the first portion of its course, and seven cases of the distal ligation of various arteries for the cure of subclavian aneurism.

It will be seen from these tables that death resulted, in seventeen out of nineteen of these cases, from hemorrhage; the seat of the hemorrhage being, in nearly every instance, at the distal side of the ligation. It seems reasonable to suppose that this accident might have been avoided in at least some of the cases, if the double ligation had been used. In single ligation the proximal side of the vessel does not generally slough, because the point of ligation is at the junction of the sheath and artery, thus leaving the nutrition of the vessel uninterfered with. The sloughing occurs on the distal side of the vessel; and as that end of the artery remains patulous, hemorrhage is the result. The reason for this is apparent, when we consider that the denuded portion of the artery is deprived of its channels of nutrition through the vaso-vasorum, to an extent varying with the degree of laceration of the sheath. This result is well illustrated in two cases in which the subclavian was tied on the inside of the scaleni muscles. The first was the case of Dr. Rodgers, in which death occurred on the fifteenth day from hemorrhage. The other was the case of Professor Parker, death resulting from hemorrhage on the forty-second day.

When the double ligation is practicable the advantage is that the denuded portion of the artery between the two ligatures sloughs without leaving either the proximal or distal side of the vessel patulous, thus securing all the advantages to be gained by ligating the vertebral and thyroid axes separately.

Microscopical Appearance of the Brain of the Insane.—Dr. WALTER KEMPSTER, of the Northern Asylum for the Insane, Oshkosh, Wisconsin, presented to the Chicago Society of Physicians and Surgeons (*Medical Examiner*, June 15, 1874) some "Notes on the Microscopical Appearances of the Brain of the Insane," based on the examination of forty-nine cases. So far as the author knows, excepting the observations of Dr. Tuke (*Edin. Medical Journal*, September, 1868) these are the only cases in which especial attention has been directed to the abnormalities found in the brains of those who die while insane.

The student is met with the stereotyped phrase that there are no discernible lesions peculiar to insanity. For a number of years Dr. Kempster has been making systematic microscopical study of the brain, and has examined the lesions of all forms of insanity, from acute mania to dementia, including puerperal and epileptic insanity.

In each and all forms he has found a marked lesion—so that certain lesions may be grouped together as common to certain forms of insanity, and to which lesions any particular type of insanity is palpably due. There is a wide difference between the lesions of acute and chronic mania.

I. In certain forms of insanity, and notably in dementia, the finer capillaries show marked indications of disease, the peri-vascular sheath surrounding the vessel is distended, so much so, that sometimes the vessel itself appears to lie in a tunnel, its calibre being much less than the sheath, doubtless due to repeated capillary congestions of the vessels often diseased—irregular in calibre, suggest-

ing the idea of aneurismal dilatations, but entirely distinct from the miliary aneurisms so ably described by Charcot.

II. Next there is a degeneration, best studied in cases of dementia of syphilitic origin, and in the medulla oblongata, in the wall of the capillary, presenting dark-red patches at various points outside its walls, which gradually thicken, and appear to be due to a fatty metamorphosis or atheroma. The description by Meynert, though accurate, is by no means so complete as could be desired.

III. In 1871, while examining a section taken from the gray and white matter of the third left anterior convolution, there was a peculiar appearance of the tissue. Situated in the white substance, but very closely to the gray matter, there were a number of small *white spots*, some round, some ovoid, clearly defined, in sharp contrast with the nerve tissue, varying in size, from 1-50 to 1-200 of an inch in diameter—these appeared to be of a granular consistence, and much more dense in structure than the surrounding brain substance; each disconnected from the other, and normal white matter intervening. They did not absorb carmine, and were not connected with the capillaries. On the surface of some of the spots are fibres of connective tissue and crystals of margarine. To determine the true character of these spots and the degeneration, certain very elaborate and extensive micro-chemical manipulations were made, not here necessary to be stated. On allowing a section to dry, either with or without the nitric acid treatment, these spots appear to project above the surface of the section. By teasing, they may with difficulty be removed. None of these spots have been observed in the gray matter. They are most numerous in the medulla oblongata, and may be found in the white matter of the spinal cord.

IV. There is another form of degeneracy, one which was found in the cases of acute mania. The spots are less in size; are far more numerous than in the other variety (3); resist carmine staining; do not possess the granular characteristic; there are no spindle-shaped fibres of connective tissues about them; they behave very differently under the micro-chemical tests applied to the other variety of spots. The points of resemblance are mainly in colour and apparent density. Neither of them have any investing membrane.

V. A fifth variety, as large in size as the third, possesses a dense investing membrane, which resists carmine staining and is less granular than the third and fourth. It exists in the same brain with the fourth variety. These spots or masses of the fifth variety are called "*colloid*," because of their resemblance to such growth, and are found in the medulla oblongata and pons Varolii. The last three varieties of degenerated masses, or spots, have one feature in common—a well-defined edge, a clean-cut margin, easily made out.

VI. A sixth variety, common in cases of dementia, and where the atheromatous capillary is found, is one in which the mass passes insensibly into the surrounding normal tissues. This form is larger and less distinct than the others. It more nearly resembles normal brain tissues. Sometimes these masses are lobulated. They are granular and dense, less numerous than in the other varieties, and do not appear in clusters. They appear to destroy or transform the tissues, and if surrounding a capillary, destroys its walls. A point of resemblance in common with the third variety is, that connective tissue fibre appears in both.

The condition of the cellular structures of the brain, of the nerve-fibres and so-called lymph-spaces, are all fields rich in results not here spoken of.

Report of One Hundred Observations made with a View to the Determining of the Sex in Utero.—Drs. ALBERT B. STRONG and D. A. K. STEELE reported to the Chicago Medical Society (*Medical Examiner*, August 15, 1874) the following observations deduced from the examination of one hundred cases.

1. In the majority of cases male foetal hearts are slower than female. 2. 132 foetal pulsations per minute is the average which constitutes a dividing line between the sexes. Below this, sixty-eight and four-sevenths per cent. are males, twenty per cent. are females, eleven and three-sevenths per cent. are doubtful. Above this fifty-three and one-third per cent. are females, twenty-six and two-thirds per cent. are males, twenty per cent. doubtful. We have

here, it may be observed, another demonstration of the fickleness of the female heart. 3. The most accurate observations are made during the last four weeks of gestation. 4. The rapidity of the heart's action is increased in proportion to the feebleness of the foetus. 5. Calcareous or fatty degeneration of the placenta renders the pulsations feeble and irregular. 6. In some cases it would be possible to diagnose diseased conditions of the placenta from careful observation of the foetal heart.

Of fifty cases examined consecutively twenty-seven gave birth to female children and twenty-three to males. The lowest rate observed was 118; it occurred but twice; once each in a male and female child. The highest rate noted was 180, occurring three times, twice in males and once in the case of a female. The average rate of the male pulse was 136.3; of the female, 137; of both sexes, 136.7. Considering the latter as the dividing line between both sexes, a pulse at and below this rate may be referred to males, and that above it to females. In twenty-six cases the sex was correctly predicted, and in twenty-four an error was made.

If the cases be excluded where there was unusual activity of the foetus, the average rate of the male pulse will be found to be 133.6; of the female, 136.2; of both sexes, 134.7.

Considering, then, 134 as the dividing line between the sexes, the diagnosis was correct in twenty-four cases and incorrect in twenty-two. If, however, 128 be taken as the dividing line, the diagnosis was correct in twenty-eight cases and incorrect in twenty-two. There were six female children whose pulse was steady below 128; five males had a steady pulse between 128 and 138; three, between 138 and 148; two, between 148 and 158, and one between 158 and 168. So far as the facts elicited from these observations are of value, it is evident that they have utterly failed to furnish a basis for determining the sex in utero,

Our observations were conducted by the aid of an ordinary Camman's stethoscope, and our experience has made it clear that more distinct sounds are audible when the bell of the instrument is moistened and applied to the abdomen without pressure, as the peculiar thrill of the foetal heart is lost when the stethoscope is grasped by the fingers.

In conclusion, it may be generally stated that we find an opinion as to the sex of the child, founded on the rate of the foetal pulse, to be of little more value than a guess, while the presentation, generally, and the exact position, possibly, may be accurately determined.

Diphtheria treated by Local Application of Subsulphate of Iron.—Dr. A. W. NELSON, of New London, Conn., extols (*New York Med. Journ.*, January, 1874) the efficacy of the local application of persulphate of iron in diphtheria. In mild cases he uses liq. ferri subsulphatis, and pure water or glycerin, in equal parts, or two of the latter to one of the former; in severe cases he uses the liquor. f. subsulph. in its full strength. Vomiting may be induced by it at first, but this is rather beneficial. For subsidiary gargles water, chlorate of potass solution, and lime are, he considers, all useful.

The iron as a gargle is disagreeable, from blackening the teeth, and staining white clothes, which are best obviated by employing a large camel's-hair pencil well washed after using.

Of forty cases treated by this method there were, he says, only three deaths.

Of the three deaths, one was moribund when first seen; the second was not treated locally with the subsulphate.

Case of Uterine Fibroid removed according to a New Principle of Operation.—Dr. EMMET reports (*American Journal of Obstetrics*, August, 1874) a case of fibroid tumour of the uterus removed by him the day before. The patient had been suffering from excessive metrorrhagia during the past month, which had been controlled only by the constant use of styptic injections. The uterus was anteverted, and its cavity occupied by a fibrous tumour of the size of a fist; the sound could be introduced to the depth of five inches posteriorly and of three inches anteriorly. Suppositories of gelatine, containing each 16

grains of Squibb's aqueous extract of ergot (equivalent to about 100 grains of powdered ergot) were introduced into the rectum, where they produced but little effect, and then daily, during the last ten days, into the cavity of the uterus itself, with marked beneficial results. The uterus, which at first had been more elongated and pear-shaped, now became broad at its fundus, where it measured no less than four inches; the tumour thus approached the internal os, although its broad attachment to the uterine wall was in no way changed. The great difficulty was to get an instrument or a loop behind or around the tumour, in order to effect its removal. Dr. Emmet retroverted the uterus, seized the fibroid with a double tenaculum, and proceeded to draw it down towards the vulva, in which attempt he succeeded after about half an hour's steady traction, removing portions of the tumour with the scissors as it became attainable. When the fibroid had been brought down to the vulva, Dr. Emmet thought he was inverting the uterus, at which prospect he was not alarmed, for he knew that he could easily return it at once; he found, however, that the uterus had contracted behind the tumour as it was drawn down, and had thus by its individual efforts enucleated the base of the tumour, and at the same time prevented hemorrhage, and made it necessary only to divide the capsule of the fibroid with the scissors in order to remove the whole growth. During the whole operation, which lasted about an hour and a half, hardly a drachm of blood was lost, and that came from the laceration of the fibroid by the double tenaculum. The base of the tumour measured about two inches in diameter; after its removal only a slight depression could be felt at the fundus to indicate the spot where it had been attached. After the operation he followed his usual rule of washing out the uterus with warm water, and painting the whole of its cavity with Churchill's tincture of iodine, as a precaution against septicæmia.

This is the most difficult case of the kind he has seen. A few years ago he removed a similar tumour in the same manner, but did not fully understand the *rationale* of the operation until yesterday. The steady traction used arrests hemorrhage, because it excites the uterus to contract behind the tumour as it is drawn down, and thus to compress the bleeding vessels, besides bringing the fibroid nearer and more convenient for removal. It is not the forcible traction of the fibroid towards the os, that is in the direction of the least resistance, but the *vis a tergo*, the contraction of the uterus behind the tumour, which gradually lifts the latter from its bed and enucleates it. This steady traction may be of service, if repeated at regular intervals, in bringing uterine fibroids within reach and making them amenable to operation, and may, perhaps, even accomplish their gradual enucleation.

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1. Original Researches in Medical Science.

2. So-called "Concussion of the Spine."

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1875, will be entitled to a premium of One Hundred and Fifty Dollars.

Dissertations on the above subjects must be transmitted, post paid, to J. B. S. Jackson, M.D., Boston, *on or before the first Wednesday in April, 1875.*

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1. Civil Hospital-Construction (not of Lunatic Asylums); Location, Materials, Arrangement, Warming, Ventilation, Drainage, Lighting; with Designs.

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For further and detailed information, see Boston Medical and Surgical Journal, of June 11, 1874, or address

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